# THE RHODESIA Agricultural Journal.



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OFFICIAL AND SEMI-OFFICIAL

SALISBURY:

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# THE RHODESIA
# Agricultural Journal

THE JOURNAL OF THE MINISTRY OF AGRICULTURE
Southern Rhodesia

Acting Editor : Marie H. Pardy, B.Sc.
(Assisted by the Staff of the Division of Agriculture and Lands).

Vol. XLVII. No. 4 July-August, 1950.

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THE RHODESIA

# Agricultural Journal

Vol. XLVII. No. 4 July-August, 1950.

## Editorial

## Notes and Comments

### EXTRACTS FROM EAST MALLING RESEARCH STATION ANNUAL REPORT FOR 1949

There are four Main Sections:

Section I—The Experimental Farm.

Section II—General Review of Research Work, with List of Papers published during the year.

Section III—Research Report and Reviews.

Section IV—Bulletin for Fruit Growers.

There had been every sign that 1949 would be a satisfactory year for top and soft fruits, but unfortunately, drought conditions later in the year upset these hopes, apples and pears being particularly hard hit; cherries and soft fruit crops, on the other hand, yielded satisfactorily.

In the case of arable crops, hay and corn were harvested successfully, but potatoes and root crops suffered from drought.

Experiments carried out on orchard soil management showed that grass swards could be beneficial for established orchards, but it seems advisable to use only autumn and winter cover for young trees. Experiments are continuing.

Various weed killers were tried out on orchards, but further tests are necessary before any definite conclusions can be drawn.

In the mineral nutrition section most attention was paid to the less severe deficiencies. The effect of the mineral content of plants on their horticultural performances is an important factor.

The second Amos Memorial Lecture: "The Soil and the Fruit Tree," by B. S. Furneaux, is published in this Report.

Interesting observations were made on the Development and Anatomy of Hop Layers. In Great Britain, hops are propagated from cuttings obtained by covering a portion of the stem with soil. This causes the stem to thicken during summer. The aerial part dies off, but the part under the soil remains alive, and this section is divided up into cuttings. For propagating, it is

usual to cover stems to about 6 inches, but trials were carried out in which stems were covered with soil for several feet to produce layers.

A method of flame spectographic analysis which is mainly automatic, is described, whereby minute quantities of copper. manganese, and rubidium can be easily detected.

Analytical methods are detailed for estimating phosphorus, potassium, calcium, magnesium iron, manganese and nitrogen, where only 0.25 grms. of dry leaf is required for analyses.

Some of the insects and mites seen in 1949 are described. A new pest of cultivated pear—Pear Sawfly is discussed.

The Marketing position of fruit is reviewed, and it is pointed out how essential it is to produce good quality fruit to yield an economic price.

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## RETIREMENT OF Mr. D. E. McLOUGHLIN FROM DEPARTMENT OF AGRICULTURE.

The retirement of Mr. McLoughlin, Chief Agriculturist, recently took place.

Mr. McLoughlin, who was born in the Eastern Cape, began his education there and from Potchefstroom he transferred to the service of the B.S.A. Company in 1921. He was appointed Chief Agriculturist in 1932.

He was particularly interested in maize and wheat production and was responsible for the commercial production and marketing of certified double hybrid seed maize.

We wish him many happy years of retirement.

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## THE LATE Mr. ARTHUR LITTLE.

The death took place recently in Cape Town of Arthur Little, very well known for many years as the principal poultry expert in the Department of Agriculture of Southern Rhodesia and the friend and adviser of poultry keepers on farms and in towns throughout the country. For many years he worked earnestly and the prosperity of the poultry industry and the activity of his branch of the Department alike bear testimony to his efforts and to his success, which lives after him.

In first announcing his appointment in the "Rhodesia Agricultural Journal" in August, 1918, it was stated that: "It is confidently hoped that much profit and advantage may thereby result." Surely this augury has most fully been realised. In the course of his duties Mr. Little traversed the country before the days of

the motor, trekking by day and often camping by night, lecturing, demonstrating, and building up this important branch of the farming industry.

Under his enthusiastic care and interest his services have notably added to the prosperity of the country. Let it be remembered that the pioneer in this good work was Arthur Little.

—(Contributed by Eric A. Nobbs, Olives, Lynedoch, C.P.)

## ERRATUM.

In the May-June, 1950, issue, in the article on page 218, "The Dairy Industry in Southern Rhodesia," by J. R. Corry, the illustration of "Jersey Cows near Bulawayo" (Mr. S. Gilman, Bulawayo) should read "Jersey Cows near Bulawayo" (Mr. S. Gelman, Bulawayo).

# Advice to Cotton Growers

JULY, 1950.

**From the Staff of the Cotton Research Station, Gatooma.**

Cotton growers are reminded that it is necesary in terms of The Cotton Pests Prevention Act to destroy the growth of cotton plants before the first day of October, 1950. It is in the interests of all growers that this should be done for the following reason:—

By destruction of the plants the food supply of several of the major pests of the crop is also destroyed; and therefore these pests are prevented from multiplying rapidly during the first months of a new season. If the plants were not destroyed they would bear an ample food supply for the multiplication of the pests in October, November, December, etc. Such pest populations would damage severely the crop of young cotton, which is usually planted in November, and which comes into flower in January.

Growers are advised, therefore, to adopt the following practices in the destruction of cotton plants before October 1st, 1950. The earlier this is done the better.

1. Cut the plants by hoe below ground level. A number of growers mow the plants, but this may not be as satisfactory. Ploughing under the plants is not as a rule recommended, as this practice often results in many of them escaping destruction.

2. Rake the cut plants into suitable rows, and when dry, burn them. As an alternative to burning, the plants may be utilised in making compost.

3. Cross-disc the lands with a disc harrow set deeply; and leave the soil in this disturbed condition for about two weeks, if possible. This operation will reduce the number of dormant cocoons of the Sudan bollworm. From the cocoons hatch moths which commence the attack in the young cotton plants in December and January of the following season.

4. Plough the land and further prepare it for planting maize. By doing so the proven rotation benefit of cotton on the yield of the following maize crop is obtained.

5. It is important and necessary that any regrowth which may arise from persistent root systems should be destroyed immediately.

It is not advisable to allow a period of about two weeks between cross-discing and ploughing operations in light-textured soils which are subjected to wind erosion. In such cases the period between disc-harrowing and ploughing will have to be narrowed or omitted.

While it is realised that the young leafy shoots produced by the plants provide a useful "green bite" for cattle during the July to September period, it must be emphasised that the destruction of the plants should not be postponed unduly on this account. It is important that wherever practicable the lands should be disced before ploughing so that the Sudan bollworm cocoons are exposed to weathering and to the action of predators for a period of a few weeks.

In addition to the foregoing, frequent inspection should be made of all sites where cotton seed is fed to cattle and of sheds in which it is stored. Cotton Stainers—active reddish or orange coloured insects—often congregate and breed in such places. The Stainer may be killed by applications of five per cent. D.D.T. in emulsion or wettable powder form. It is advisable to protect the seed which is to be fed to catle from being treated with the D.D.T.

Finally, it must be emphasised that the destruction of the cotton plants, the cross-discing of the land, and the prevention of breeding of Stainers on cotton seed should receive the attention of ALL cotton growers. Any grower who does not heed the advice given can cause the multiplication and spread of several of the major pests of cotton over a wide area during the important early fruiting stages of the crop of a new season.

# Annual Report of the Secretary, Division of Agriculture and Lands, for the Year ended 31st December, 1949

[NOTE.—Portions of the Report of the Secretary, Department of Agriculture and Lands, have been omitted in those sections which are more fully covered in the individual reports of the Heads of the various Branches, published elsewhere in this issue.—Ed.]

## GENERAL.

The year under review has been another difficult one for the farming community. The rainfall has again been under normal and badly distributed. This erratic distribution of the rainfall materially reduced the yield of agricultural crops, stock feeds and natural veld, resulting in lower livestock production. It was necessary in consequence to introduce drought relief measures to a limited extent in certain areas of the Colony, notably the Mazoe Valley.

It is patent that water conservation has become a national problem. This is especially true in the lower rainfall areas where, with the increased intensity of agricultural production of recent years, there is a danger that these areas will become a recurrent liability to the State in years of low rainfall unless more of the run-off is held back.

**Conservation and Extension.**—This Department is now well established, and during the last two years has gained the confidence of the I.C.A. committees and farmers' organisations. The staff position in this Branch has improved, increasing from 62 to 69 during the year, but it is still 10 short of the authorised establishment. A number of the new field officers lack experience and cannot yet pull their full weight. Organised training measures, however, have been adopted which will overcome this weakness more rapidly than was originally anticipated by those responsible for the work. The new appointments include two Senior Extension Officers and four Junior Extension Officers. It is intended to expand this important activity of the Branch further.

There has been a noticeable increase in the amount of work pegged and constructed during the year.

An achievement during the year, in which the work of this Branch played a major part, has been the acceptance by the Intensive Conservation Area Committees, the Rhodesia National Farmers' Union and the Rhodesia Tobacco Association of a series of good farming principles which it is planned (with the co-operation of these bodies) to bring into general operation throughout the country.

The three demonstration farms at Chipinga, Karoi and Umshandige have made good progress during the year and are

now practically in full operation. Each demonstration farm serves its particular area and is planned to encourage and lead to establishment of the type of mixed farming suited to these areas which have still large undeveloped potentials for food production.

**Gwebi College of Agriculture.**—Arrangements have been made to open the Gwebi School of Agriculture in February, 1950. The actual assembly of the staff commenced in September last. The facilities at Gwebi are good, and accommodation will be provided for a start for a total of 48 students in a two-year diploma course —24 juniors and 24 seniors. The vicinity is healthy and the Gwebi Farm affords excellent opportunities for practical work in animal and field husbandry. The farm is highly mechanised. While there are no facilities for tobacco culture at present, it may be possible to obtain these facilities on neighbouring farms. This course should meet the long-felt need for a training centre in scientific agriculture in this Colony.

**Supplies for Slaughter Cattle.**—The demand for beef is still well in excess of the supply and present indications are that this shortage will continue. The increased demand for meat is due to an increase in the European and Native population, an increase in the number of Natives employed in industry and a general increase in the consumption of meat by the African population, generally due to a rising standard of living. It is evident that other sources of protein, such as groundnuts, beans and pulse crops must be exploited to a much greater extent in the future to supplement the shortage of animal proteins. These vegetable proteins are considerably cheaper to produce than meat, though not so popular with the African.

To meet the anticipated effects of devaluation and as an inducement to farmers to produce better and heavier cattle for slaughter, the prices of slaughter stock were raised by an overall weighted percentage of approximately 13 per cent. from 1st November, 1949. To encourage producers to hold back their cattle until in proper condition for slaughter, a system of weight bonuses has also been introduced, an extra amount of 10s. per 100 lbs. cold dressed weight is being paid on cattle exceeding the following cold dressed weights in the various groups:—

| | |
|---|---|
| Rhodesia's Best ..... ..... ..... | 600 lb. |
| Imperial ..... ..... ..... ..... | 600 lb. |
| "A" Grade ..... ..... ..... ..... | 550 lb. |
| G.A.Q. (oxen) ..... ..... ..... | 650 lb. |
| G.A.Q. (cows) ..... ..... ..... | 450 lb. |

The problem of levelling out supplies of slaughter cattle throughout the year is still unsolved. The provision of sufficient cold storage space to handle the bulk of the peak supplies in March and June will be a very expensive proposition, and if pushed to the extent commonly advocated will be uneconomic. A campaign for obtaining more cattle in the maize areas for the supply of beef from August to December was, therefore, continued during the year. A considerable increase in the number of stall-

fed cattle will be necessary to overcome the seasonal fluctuations. It is hoped that the new price structure and the increased bonus paid for weight will encourage the feeding of steers in greater numbers during the dry season.

**Supplies of Pigs and Sheep.**—The pig industry is still experiencing a difficult period, essentially as a result of the relatively high cost of feeds, including maize, and the shortage of animal proteins. The interest in sheep farming remains lukewarm, despite the fact that it can form a most useful sideline on most farms.

For the time being this relatively high price of feed and the more attractive returns obtained from tobacco and cattle seem likely to discourage any rapid expansion in these two lines. Pork and mutton production must, however, increase largely when livestock production becomes more intensified.

**Hybrid Maize.**—Maize is the most important food crop in the Colony, and the plant breeding work connected with hybrid maize has been pushed during the year. Commercial double hybrid seed was put on the market for the first time in 1949, when the demand greatly exceeded the supply. The production of hybrid seed was greatly expanded during 1949, and it is anticipated that some 15,000 bags of double hybrid seed will be available during 1950, i.e., sufficient for nearly 250,000 acres. This supply may exceed the local demand until the seed is better known, and plans are being made to export a certain amount of hybrid seed.

The incentive price of 35s. per bag for maize of the 1949/50 crop, which was announced towards the end of the year, has resulted in a very considerable increase in acreage planted and with a favourable season should result in a bumper crop during 1950.

**Wheat.**—The season has been a disastrous one for wheat as the summer drought seriously affected water supplies and the moisture of retaining vleis dried up early. Some of the regular larger producers and many small growers planted no wheat under irrigation at all. There is not likely to be any major expansion in the production of wheat in the Colony until some of the larger irrigation schemes projected are in operation.

**Dairying.**—Nineteen forty-nine was in general an unfavourable season for dairying and, though the increased production of dairy products of 1948 was not quite maintained, the output in 1949, considering the season, maintains the upward trend in dairying in the Colony.

The future of the Dairy Industry has been a matter of exhaustive enquiry during the year. The prices for dairy products has been raised during the year to stimulate production and meet the effects of devaluation. The increases in prices were gazetted during the year.

There is a widespread demand, however, for some form of organised marketing for dairy products promising more stability to the industry so as to develop the confidence necessary to ensure a rapid increase in dairy production, which, under present conditions is too exacting a form of farming to be popular.

## POULTRY.

The poultry industry has passed through a difficult year. The good prices in 1947 and 1948 resulted in over-production and the eggs stored late in 1948 had to be carried over into 1949 and then could not be sold locally during the scarce season of that year at the prices fixed. This surplus will have to be exported overseas where prices are unprofitable to the local producer. It is likely now that contraction of the industry will take place during 1950. There is, however, strong agitation by producers for some statutory marketing scheme to meet the situation. Measures are under consideration to support the export of the surplus eggs just referred to pending a fuller investigation of the industry.

## TOBACCO.

Seasonal conditions were generally unfavourable for tobacco, and the quality of the Virginia flue-cured and fire-cured crops was reduced by the dry weather which occurred at critical periods of plant development. There was difficulty in obtaining sufficient native labour, especially in the case of new settlers.

It is clearly realised by all progressive growers that it is necessary to improve both the average quality of the crop and to bring down production costs before the industry will be on a sound basis to meet the competition which will arise presently. In the sellers' market of to-day, however, most producers tend very dangerously to disregard this sound outlook. It is important, therefore, that in co-operation with the Rhodesia Tobacco Association arrangements were made during the year which should result in a greatly accelerated programme on tobacco research planned to secure increased quality and yields under our conditions. It has been agreed that the Government will spend £35,000 per annum on Virginia tobacco research and the Association up to £60,000 per annum. A site for a new central Research Tobacco Station near Salisbury is being investigated now by the Tobacco Research Advisory Committee. There are some matters in regard to staff, methods of finance and administration still to be resolved, but the present co-operation is a good augury for the future. Useful progress was also made by the Tobacco Pest Control Research Scheme which has now completed a full year. Damage by insect pests and plant diseases to tobacco was light during the year.

## CHEMISTRY.

A relatively serious bottleneck is occurring owing to the shortage of chemists. The routine work of this Branch increased by 33⅓ per cent. in 1949 over the year 1948. More than 300 extra soils were submitted for analysis during the year and there has been a fourfold increase in the number of farm foods submitted. This demand shows an appreciation of the value of this type of work to the farmer. There is also a considerable backlog in soil survey work, both in connection with the irrigation projects which are under investigation and the general survey of the Colony. An increase in the staff of the Branch is now under consideration.

## DEHYDRATION.

The factory continued production during 1949, and at the end of the year showed a gross profit on sales of £1,257. Approximately 671 tons of vegetables, valued at £14,590, were supplied by 48 growers, and this raw material was converted to 54 tons of dehydrated vegetables, valued at £32,890. Sales amounted to £32,148, of which produce to the value of £7,680 was exported, mainly to Northern Rhodesia.

A new and improved costing system has been adopted and the control of consumable stores has been adapted to meet Treasury requirements.

It is considered that while the industry can continue to work satisfactorily on the present basis of production, an expansion of the activities into canning would reduce the selling prices of dehydrated products and give a necessary outlet for the potential fruit output of the Eastern Districts.

## BRANCH OF AGRICULTURAL ECONOMICS.

This Branch was strengthened during the year by the appointment of a Senior Professional Officer and two technical assistants.

The work of the economics and marketing section includes commodity costings, and economic surveys which, during the past year, included the economics of small-scale irrigation, farm labour surveys and the scope of mechanisation. Considerable data for the Engledow and the F.A.O. Reports were collected. The Registrar of Co-operative Societies during the year investigated the affairs of nearly all the registered companies and provided useful guidance to these companies.

The formulation of agricultural legislation to deal with marketing problems is an important function of the Branch. Recent pressure for marketing measures to control eggs, milk, cattle, fruit and vegetables has brought the question of a General Enabling Marketing Act to the fore. The implications of such legislation are now being studied.

Devaluation was perhaps the most important factor bearing on the agricultural economy of the Colony in 1949. The move towards the relaxation of control and the removal of subsidies which followed devaluation may profoundly affect the agricultural economy of the Colony as it is evident that freedom of control and the removal of incentive subsidies are, by nature inconsistent with a policy of self-sufficiency in basic foodstuffs. It is necessary also to take careful stock of the position so as to ensure that the price and control measures retained do not lead to an indiscriminate scramble for self-sufficiency in all foodstuffs to the detriment of secondary industry or extinguish the possibilities of future export of products which eventually will have to seek a market beyond the bounds of Southern Rhodesia.

The basic information on which to formulate a programme of self-sufficiency is lacking and it is in the collection of this information that a great part of the efforts of the Economic Branch are now being directed.

## DEPARTMENT OF FORESTRY.

**(a) Forest Act.**—One of the most important features of the Forest Act which was promulgated during 1949 is the recognition of indigenous forest as "forest" and the provision of measures for its protection.

From the earliest days in this country indigenous woodland has been largely reserved for the mining industry, subject only to certain primary reservations to the landowners for domestic and farming purposes. The Forest Act now, while it allows the miner to retain his original rights, provided the taking of timber will not lead to undue damage to the locality or shortage of timber in the Colony as a whole, does enable indigenous forest, whether in Crown or private lands, to be protected where it is managed under approved systems of forest culture. It is considered that this measure will lead to a greater and sustained production of indigenous timber in the Colony.

In other respects the Forest Act follows the general established principles for the control of forest lands in the Commonwealth and provides also for the setting aside of demarcated forest, nature reserves, the protection of particular trees, the reservation of timber resources, the regulation of the trade in Forest Produce, and for the control of prices.

**(b) National Parks Act, 1949.**—The National Parks Act passed during the year provides the organisation within the Department of Internal Affairs which, during 1950, will take over the management of National Parks and Game Reserves from the Forest Department.

The Forest Department has, during the last 20 and 15 years respectively been responsible for the control of the Wankie Game Reserve and Rhodes Inyanga Estate. While the transfer of these areas as National Parks has caused a certain departmental regret, it has been realised for some time that to secure rapid progress, it would be necessary to develop the National Parks as a separate entity with a measure of public control and separate funds.

**(c) Development.**—The total area under the administration of the Forestry Department is now 1,301,448 acres. Recommendations have been made for the reservation of further land on the Mafungabusi Plateau, West of Gatooma, for Forestry purposes. At present there is a serious shortage of plantable land for softwoods, and it has been estimated that, to ensure reasonable national security, it will be necessary for the Government to have 85,000 acres under softwood forests by 1980, in addition to private softwood forests. To meet these requirements the Government needs a further 30 35,000 acres of plantable land for which enquiries are made as the opportunity occurs.

The staff position is now more satisfactory and, by the opening of new stations, it is aimed to increase the planting programme to 2,500 acres in 1950-51 and to 3,000 acres in the following year. Shortage of labour, both the Eastern Border and at Mtao, has proved a serious limiting factor in expansion during the past year. This shortage of native labour is a matter of great concern to the

industry. Efforts are being made to attract more labour by improving the working and living conditions for the natives. To a certain extent the shortages can be met by mechanisation but, unless the measures now being taken result in an increased and more efficient supply of native labour it may not be possible to implement the programme of expansion now planned.

It is notable that all conservancies report an increased interest in private forestry. In the Eastern Districts large-scale afforestations by private concerns shows good progress both in wattle culture and the growing of softwoods. A number of smaller private growers are planting trees. The policy has been to encourage strongly the development of these private plantations, wherever lands are suitable for the economic production of trees. The latest figure available shows that area of private plantations in 1948 amounted to 43,967 acres.

During the year 902 acres were planted to trees and 1,050 acres prepared for planting. The generally hot dry planting season was unfavourable, especially at the Martin and Mtao Forest Reserves. The total area of State plantations amounts now to 10,704 acres, of which 8,877 acres are soft woods.

**Commercial Aspects.**—Plans for a new sawmill at Stapleford were drawn up during the year and a pressure preservation plant to replace the existing open-tank system at Mtao is under consideration. It has been suggested that these commercial activities of the Department should be brought under the control of a Statutory Forestry Commission and proposals to this end are at present being examined.

The unaudited revenue and expenditure figures for the calendar year 1949 are: Revenue £40,546, expenditure £79,763 (including £8,244 for vermin destruction and game reserves).

The forests are still in the process of establishment and a revenue of over £100,000 is anticipated by 1955.

## DEPARTMENT OF LANDS.

This Department has had to contend with a rather difficult year. The Land Settlement Scheme was adversely affected by the unfavourable season, especially in parts of the Mazoe Valley, Hartley and Fort Victoria districts, and it was necessary to find special drought relief loans in a number of cases. The curtailment of credit through the Prescription Amendment Act of 1949 caused a number of farmers to take stock and limit their spending.

The difficulty in obtaining Field Officers and Land Inspectors is still acute, though commencing salaries for Land Inspectors have now been improved. Despite these better starting salaries, which brought in more enquiries for posts, no marked early improvement in the staff position can be expected, as the type of man suitable for the work is in keen demand in the tobacco industry which can pay better. The expanding extension service in the Department of Agriculture is, however, taking over more of the post-settlement inspection work which relieves greatly the small staff of Land Inspectors.

Attention must be drawn to the decreasing amount of useful Crown Land available for alienation. While an area of over 6,000,000 morgen is at present available, and might appear an ample reserve, little of the land is at a convenient distance to rail or suitable for even semi-intensive development. Almost all of it requires full water development. The question of allocating further land to native development has been under critical investigation during the year, but as the area of unassigned land available for allocation or exchange suitable for European occupation is very limited, not much expansion can come from this source except indirectly, by providing land to which natives now in occupation of land in European areas can be moved. The future expansion of European agriculture lies in the more intensive use of the land already occupied and not in acquiring more land from the unassigned areas.

## VETERINARY SERVICES.

**Animal Health.**—Generally speaking, the disease position in the Colony was very satisfactory at the end of 1949. There were no fresh cases of Foot and Mouth or African Coast Fever, though there was some spread of Theileriosis especially in the Lomagundi district. Drought conditions, which curtailed dipping, accounted for most of this spread. An increase in Epivaginitis has been recorded, due largely it is thought to a better recognition of the disease through experience rather than to the spread of the disease now in operation. There is more confidence now that this disease can definitely be controlled by treatment, the removal of non-breeders and the use of artificial insemination. Tickborn diseases, such as Piroplasmosis and Anaplasmosis, show an increase. Trypanosomiasis had remained stationary.

Artificial insemination which was started last year on a fair scale has not made much progress. Around Salisbury it has so far not been really successful, due to causes described fully by the Assistant Director, Veterinary Services (Research) in a separate report. Around Bulawayo, on the other hand, where Epivaginitis infection was not so extensive and breeders carried out their own insemination, results were better. The provision of trained operators to carry out insemination for farmers under local conditions is expensive, but satisfactory and economic results are reported in some dairy herds where the individual farmer collects and uses semen from his own bull. On present indications the practice of artificial insemination is not likely to expand rapidly in Southern Rhodesia in the near future unless disease conditions make it essential to resort to this method of insemination on the larger scale.

It is unsatisfactory to have to record that tick life in the Colony as a whole is on the increase. This is primarily considered to be due to the cessation of dipping in the winter. The position has been further accentuated during the last three years of low rainfall as in certain districts the cattle get so poor that dipping could not be resumed until late in December.

A further contributing factor is probably the failure of present Benzine Hexachloride dipping fluids to maintain their strength and tick killing properties under local conditions. Some farmers have been misled by the earlier good results from these dips not realising the loss of efficiency of the dip until the tick population had materially increased. At present these preparations appear to serve a useful purpose only when used in conjunction with an arsenic dip. They then give a "quick knock-down action" which deals very effectively with the first flush of ticks after the rains.

**Veterinary Research.**—There has been a very large increase in the routine and smear work carried out in the laboratory. Fortunately it has been possible to strengthen the Research staff this year. It is hoped to make progress during 1950 with the establishment of a Veterinary Research Field Station at Gwebi to the west of the railway line. Preliminary work has been planned there with Epivaginitis.

## DEPARTMENTAL REPORTS—DIVISION OF AGRICULTURE AND LANDS.

Detailed reports relating to the work performed by the Departments of Irrigation, Veterinary Services, Research and Specialist Services, Forestry, Lands and Surveyor General, have been submitted separately.

## CONCLUSION.

Shortage of staff, transport, materials and housing continue to cause difficulties and some exasperation. I have to express my appreciation of the willing co-operation and hard work of the Division under circumstances which were none too easy.

The valuable assistance of the Rhodesia National Farmers' Union, the Rhodesia Tobacco Association and the Natural Resources Board must also be acknowledged gratefully.

A. E. ROMYN,
Secretary,
Department of Agriculture and Lands.

# Summary of Annual Report of the Director of Irrigation for the Year ended 31st December, 1949

## DEPARTMENT OF IRRIGATION.

Despite a shortage of transport, much useful reconnaissance surveys and constructional work was completed by this Department during the year. A disappointing feature of the year's activities, however, has been the poor overall performance of the mechanical units. Figures submitted elsewhere by the Director of Irrigation indicate a loss of some 43 per cent. in possible working hours due to delays outside the control of his Department. In present circumstances considerable delays of various kinds must be anticipated, but the position has caused sufficient concern to justify an examination now in progress, into the whole method of disposal and control of mechanical equipment in the Service.

**Circle Activities.**—There has been a material increase in the extension activities of this Department. The number of advisory visits by Engineers has increased from 3,746 in 1948 to 5,816 in 1949. Over half of these visits were made to private applicants requiring advice on the construction of dams and weirs and small and large irrigation schemes. This demand for advice indicates a steady increase in the water conservation plans of farmers. Outstanding applications of visits to farmers total 484 at the end of the year, representing 2.2 engineering years of work and indicating the scope for further staff on this work.

**Works Completed.**—The works completed or in progress during the year in European areas include: The Upper Umgusa Dam, Geelong Dam, Tuli River Dam, Maleme River Dam, and the commencement of the lining of the main canal at Umshandige.

Preliminary work is in progress on the Hunyani Poort site. This dam will be the most important earth rockfill structure so far constructed in Southern Africa.

During the year 35 medium and large dams and weirs and four vlei dams were completed in Native Reserves. Twenty-three dams are under construction and core trenches had been put in at 35 sites by the end of the year in anticipation of the arrival of mechanical units. These dams do not include the considerable number of smaller dams built by the Land Development Officers in the Native areas under the guidance of Irrigation Engineers.

Most of the works constructed provide water supplies for stock and domestic purposes, but a number of irrigation schemes in the Native Areas are being surveyed at the same time with the belief that it will be necessary to develop irrigation on a considerable scale in these reserves if a large population is to be supported adequately.

**Water Boring.**—Water boring had again to be brought under "drought control" for the latter part of 1949. All the Department's machines were allocated for this purpose, and in addition, 15 machines belonging to private contractors were engaged by the Government. Three hundred and eighty-five boreholes were put down by the Government machines during the year with an overall percentage of 71.4 successes. The demand for boreholes, both in European and Native Areas, is quite beyond the present capacity of the drills which can be mobilised. There were 35 Government drills in operation at the end of 1949, and provision has been made to increase this number to 45 by the end of 1950. A limiting factor has been the scarcity of trained and reliable crews for the drills, and arrangements are now being made to establish a school to train drillers so as to make more trained personnel available for overtaking the backlog of work, both in European and Native Areas.

**Hydrographic Work.**—There is a general realisation now that the availability of water will be a limiting factor in determining the industrial and agricultural potential of the country. Three unfavourable rainy seasons have served to drive this point home, and emphasise the importance of the work carried out by Hydrographic Branch in measuring stream flows and the Reconnaissance Branch in the survey of possible dam sites. There has been popular demand also for the establishment of a National Water Authority to control the distribution of the water resources in the Colony. The possibilities of such an authority are under consideration.

P. H. HAVILAND,
Director of Irrigation.

# Summary of Thirtieth Annual Report of Chief Conservator of Forests for the Year ended 31st December, 1949

1. **Legislation.**—The outstanding feature of the year was the promulgation of the long-awaited Forest Act. In most respects the Act is conventional in following the recognised and well-established principles of forest laws of the Commonwealth. It provides for the setting aside of demarcated forests and nature reserves which are free from servitudes and which may not be withdrawn or alienated without the consent of Parliament; for the protection or reservation of particular trees and conservation of timber resources especially where their removal leads to spoilation of the land; for regulating the trade in forest produce; for the control of fires and the burning of vegetation.

In many respects the most important feature of the Act is the recognition of the indigenous forest as part of the land. From the earliest days the indigenous woodland has been largely reserved for the mining industry. Apart from primary reservations allowing the landowner the use of timber for domestic and farming purposes, and special reservations allowed by the Mining Commissioner, the miner had the right to take free of charge fifty per cent. of the timber from land held under Gold Belt title, and all other timber on payment of certain tariff rates from land held under non-Gold Belt title. There was thus little incentive for the owner to protect or manage the woodland on his land. On Crown land the miner had the right to take timber free of charge, even on land which had been devoted to forestry purposes by the Land Apportionment Act.

The Forest Act now safeguards Crown demarcated forests and nature reserves and any trees which are specially reserved or protected. It gives equal protection to protected private forests which are run under an approved system of management.

In other respects the miner retains his original rights, but subject to obtaining a special permit to be granted by a Mining Timber Permit Board which can refuse permits if in his opinion the taking of timber will lead to undue damage to the locality or to a shortage of timber in the Colony as a whole.

In granting permits the Board may impose conditions as to period, place, quantity and class of timber and the manner in which it shall be cut and removed.

It will be seen therefore, that the Act is not designed to deprive the miner of timber, but to control the taking in the interest of the land.

It is fair to point out that, of recent years, the use of electricity, coal and internal combustion engines has reduced the drain by miners on indigenous timber very considerably.

It is confidently expected that a further advantage of the permit system will be the collection of useful information as to the timber requirements of the mining industry.

2. **Game Reserves and National Parks.**—After twenty years of administration of game reserves, this Department is about to transfer control to the Department of Internal Affairs, which is assisted by the newly formed National Parks Advisory Board constituted by the National Parks Act, 1949.

For some years the department has advocated this change, principally because it was felt that game reserves and national parks would progress at a faster rate by being a separate entity, with a measure of public control and with its own funds which would not be confused with forestry, and partly to allow a short-staffed forest service to concentrate on its more legitimate duties.

The association has been a happy one: it could not be otherwise when the important ecological relations between animal and forest are considered, and the Department views the approaching severance with regret. This regret is tempered by the knowledge that the Department is represented on the Board and that the game in its own forest reserves still remain.

The writer feels justified in departing from established practice, and he cannot refrain from paying a warm tribute to the Senior Game Warden, Mr. E. Davison, who started the Wankie Game Reserve in 1928, and who is almost entirely responsible for the development it has reached to-day. The Colony and the National Parks Authority are fortunate in retaining the services of a man of such wide experience and intimate knowledge of and love for his work. The loyal co-operation of the Senior Game Warden and his assistants is gratefully acknowledged.

The Rhodes Inyanga Estate, with which the Department has been associated in an administrative capacity for fifteen years, came under the control of the National Parks Authority during the year by virtue of the passing of the "Rhodes Estate Inyanga Act, 1949," and of the National Parks Act already mentioned.

The portion of the Mount Silinda Forest acquired by Government last year, together with that part which is on the Gungunyana Forest Reserve, was placed under the control of a warden under this Department during the year. These two parts will be proclaimed a national park in the near future. Administration by this Department will continue for the time being and there is an understanding that the Department will retain the right to carry out certain silvicultural research on the forest from time to time.

3. **Land.**—The Forest Act gave existing forest reserves and certain areas reserved for forestry the status of demarcated forests, the details of which appear in the main body of the report. The total area under the administration of the Department for forestry purposes is now 1,301,448 acres.

It has been estimated that by 1980 Government should have 85,000 acres under softwood forests. This means that the Department will need a further 30,000 to 35,000 acres of plantable land. No land was actually acquired to this end during the year, but negotiations are proceeding.

4. **Management.**—Important progress was made in enumeration surveys. In Matabeleland completed surveys of over 220,000 acres revealed a merchantable volume of 6½ million cubic feet of mukusi, mchibi, mukwa, igonde and ishungu on certain Native Area land and forest reserve.

To safeguard the interests of certain African holders of land acquired by them in the Gwaai Purchase Area, a 100% enumeration of the merchantable timber on their farms was made and enabled them to sell to sawmillers timber to the value of £647 1s.

A determined effort was made to complete the working plan survey of all plantations at Stapleford in excess of five years of age. The calculations are almost complete, and will be of the greatest value in determining the yields available to sawmills for the next five years, in the prescription of future treatment of the stands and in giving for the first time a comprehensive picture of the total growing stock. Good progress was also made at Mtao.

It is a pity that only forest officers can appreciate fully the arduous drudgery of these surveys.

5. **Protection.**—The year has been a particularly severe one for veld fires, and it is pleasing to record that only one small fire, involving the death of 24 eucalypts, occurred in all plantations and that in the Matabeleland Conservancy where fire protection plays such an important part in the indigenous forests only 5% was traversed by fires.

The effects of the accumulation of three drought years were apparent throughout the Colony, especially during the long hot spell preceding the present summer. Severe losses of certain species were experienced at Mtao and the planting programme at Martin was again curtailed. The latter station which is only three years old has been unfortunate in encountering three successive bad planting seasons in a locality which is normally noted for its ample rainfall.

The importance of patrols, fire and general protection can be gauged from the fact that over £5,500 were spent in native labour and rations during the year.

6. **Silviculture.**—During the year 902 acres were planted and 1,050 acres prepared for planting. The total area of State plantations now amounts to 10,704 acres, of which 8,877 acres are of softwoods.

With the opening of four new stations it is anticipated that the annual planting will increase to 2,500 acres during 1950/51, and it is hoped that the annual programme of 3,000 acres will be achieved in the following year.

The Salisbury Forest Nursery was in progress of reorganisation, but it again achieved a record year with a revenue of £5,331 and dealt with 5,750 visitors. Good progress was made in preliminaries leading to new forest nurseries at Umtali, Gwelo and Bulawayo and these should be in being during 1950. Apart from the above-mentioned, which are concerned with sales to the public, nurseries were maintained at all afforestation reserves.

During the year operations covered 600 acres of blankings, 251 acres of prunings, 629 acres of thinnings and 110 acres of clear-fellings.

7. **Exploitation.**—In the Matabeleland Conservancy 1,800,000 cubic feet of mukusi and 66,810 cubic feet of mukwa were felled on forest reserves. At Stapleford 18,166 cubic feet of round timber and 43,877 cubic feet of sawn timber were disposed of, while Mtao produced 109,568 cubic feet of round timber of which 25,553 cubic feet were creosoted.

8. **Financial Results.**—The figures, unaudited, for the calendar year were Revenue £40,546 and Expenditure £79,763.

9. **Administration.**—The staff position improved during the year, although it was not possible to bring the forester staff up to strength. The approved establishment is based on the 1947 requirements, but already it is apparent that the expansion of forestry necessitates the employment of more trained men. This has been recognised and it has been approved that the Forestry School, which did such good work in training ex-Servicemen after the war, shall be re-opened on modified lines during 1950, when fourteen young men will commence a two-year course to qualify them as foresters.

The native labour position at Mtao is now experiencing a shortage and in the Eastern Districts the position is by no means secure. Considerable improvements to housing, and amenities for families and the provisioin of land for cultivation and stock are now being pursued. The writer records with pleasure his appreciation of the keenness and loyalty of all members of the Department.

10. **Private Forests.**—It is notable that all conservancies comment on the increased interest taken by the public in forestry.

During the year eight addresses were given to Farmers' Associations and other bodies. Over 95 advisory visits were made, including special visits to value forest lands or to report on tree planting projects. Much time of the staff at Head Office and conservancies was given to advisory work, both by interviews and correspondence.

Exhibits were staged as usual at the Salisbury, Bulawayo and Umtali Agricultural Shows, and for the first time at the Gwelo Show, where considerable interest was taken.

In the Eastern Districts large-scale afforestation by private concerns continued apace, both in the cultivation of black wattle and the growing of softwoods. Two large afforestation schemes were commenced in the Eastern Districts and other smaller private growers contemplate expanding their operations.

The latest figures available show that the area of private plantations in 1948 amounted to 43,967 acres.

E. J. KELLY EDWARDS,
Chief Conservator of Forests.

# Summary of Annual Report of the Director of Veterinary Services for the Year ended 31st December, 1949

The disease position in the Colony has been very satisfactory.

**Foot and Mouth Disease.**—All the areas under restrictions carried over from 1948 were released in February, 1949.

**African Coast Fever.**—There have been no cases in the Colony during the year. The last remaining farms in the Chipinga District were removed from quarantine in September; this was two years after the last case had been diagnosed in the District. In Beatrice District the last case recorded was in March, 1948, and the infected farm will be released in March, 1950.

**Theileriosis.**—There has been an increased spread of this disease, especially in Lomagundi District, where 11 outbreaks were recorded. Drought conditions, which interfered with regular dipping, are accountable for most of this spread, and it has been found hard to control on farms which are only lightly stocked, rendering it difficult to clean the veld of ticks.

**Epi-Vaginitis.**—Here again a considerable increase has been recorded. This has not been due to an increase in spread, but rather to the fact that an intensive inspection for the disease has been carried out during the year and a number of existing infections were found.

On a large number of farms there was no history which would have led one to suspect the presence of the disease, and reports of normal calf crops showed that it had little effect on the herds. There is little doubt that this disease had been present on a number of farms for some considerable time.

Owing to the increase in tick life other tick-borne diseases, such as Piroplasmosis and Anaplasmosis, have also increased. The position with regard to Trypanosomiasis has remained stationary.

Artificial Insemination has been used primarily as a method of coping with Epi-Vaginitis, and was used only on infected farms with the exception of a few plots and small herds in Salisbury town area.

It has met with varying success. In Bulawayo, where the number of infected farms were few and it was possible to carry out a Veterinary examination of all cows and to eliminate non-

breeders, the disease has been very satisfactorily controlled, but in Salisbury area, where the number of infected farms was large, such a Veterinary examination was not possible, and all cows were inseminated when they came in season; this caused a very low conception rate.

Bulawayo cattle owners were far more enthusiastic than Salisbury about adopting insemination, and a number of the farmers have learnt the technique and are doing it themselves, and this of necessity accounts for the greater success in that District.

Their results give a very good indication that the disease can be successfully controlled in dairy herds. The problem of control in ranch cattle where Artificial Insemination is not practical is still being investigated.

As in previous years, the work of the Department both in the Field and in the Laboratory has been continually hampered by the shortage of staff and lack of efficient transport; the clerical side was also similarly handicapped.

P. D. HUSTON,
Director of Veterinary Services.

# Summary of Annual Report of Chief Animal Husbandry Officer for the Year ended 31st December, 1949

**General.**—The Colony experienced a very bad year as far as rainfall was concerned, both in quantity and distribution. This resulted in very unfavourable conditions for livestock production. Grazing was very poor and lacking, especially in quality. Many areas also experienced very serious water difficulties. Conditions were also very unfavourable for crop production and farmers were not in a position to provide the necessary supplementary foodstuffs for the dry season.

This state of affairs was aggravated by the fact that rains came very late after the dry season. A serious position prevailed at the end of the year, and heavy losses of stock were suffered on many farms.

**Cattle Industry.**—Below are given figures of the number of European-owned cattle in the Colony over the last five years.

EUROPEAN-OWNED CATTLE POPULATION.

| Year | Total |
|---|---|
| 1944 | 956,217 |
| 1945 | 1,001,269 |
| 1946 | 1,020,677 |
| 1947 | 1,036,788 |
| 1948 | 1,109,483 |

From these figures and statistics of earlier years the increase of 6.8 per cent. in European-owned livestock during 1948 was the highest since 1940. The number of cattle at the end of 1949 is not yet known, but it must be expected that the unfavourable conditions experienced during 1949 will probably have an adverse effect on the number of European-owned cattle at the end of the year.

## SUPPLIES OF SLAUGHTER STOCK.

The demand for beef is still well in excess of the supply and the present indications are that this position must be expected to continue for several years.

The following factors are essentially responsible for the increased demand for meat:—

(1) Increase in European population.

(2) Increase in native population.

(3) Increase in number of natives in employment.

(4) Increase in the consumption of meat by the African population in general.

The number of cattle slaughtered during 1948 shows a big decrease over 1947 when a considerable amount of cattle were slaughtered as a direct result of drought conditions. The decrease in the number of cattle slaughtered was counteracted to a certain extent by a considerable increase in the average cold dressed weight of all cattle slaughtered during 1948.

Figures so far available for 1949 indicate that the number of cattle slaughtered during the year will be approximately the same as those for 1948.

**Prices of Slaughter Stock.**—Prices of beef cattle delivered to the Cold Storage Commission of Southern Rhodesia were again under review during the year and the new prices given below were agreed to and became effective on 1st November, 1949.

In order to give additional incentive to farmers to produce better and heavier cattle, which is a very important factor in the drive for increased production, the bonus payable on cattle over certain weights was doubled.

**Monthly Prices per Hundred Pounds Cold Dressed Weight According to Grade.**

| Month | Rhod. Best | Imp. | A Grade | G.A.Q. | F.A.Q. | Com-pound | In-ferior |
|---|---|---|---|---|---|---|---|
| January ..... | 88/- | 85/- | 70/- | 66/- | 48/- | 42/- | 24/- |
| February ..... | 76/- | 71/- | 60/- | 53/- | 46/- | 40/- | 24/- |
| March ..... | 76/- | 66/- | 57/- | 49/- | 42/- | 36/- | 24/- |
| April ..... | 76/- | 66/- | 54/- | 49/- | 42/- | 36/- | 24/- |
| May ..... | 76/- | 65/- | 54/- | 49/- | 42/- | 36/- | 24/- |
| June ..... | 76/- | 68/- | 55/- | 51/- | 43/- | 37/- | 24/- |
| July ..... | 76/- | 71/- | 60/- | 53/- | 44/- | 39/- | 24/- |
| August ..... | 83/- | 77/- | 61/- | 57/- | 47/- | 41/- | 24/- |
| September ..... | 85/- | 81/- | 68/- | 60/- | 49/- | 43/- | 24/- |
| October ..... | 88/- | 84/- | 72/- | 65/- | 49/- | 43/- | 24/- |
| November ..... | 90/- | 86/- | 74/- | 72/- | 50/- | 44/- | 24/- |
| December ..... | 90/- | 88/- | 74/- | 72/- | 50/- | 44/- | 24/- |

As an inducement to farmers to produce better and heavier cattle which will have the effect of considerably increasing production from present herds without increasing the age of the cattle, an extra amount of 10s. per 100 lbs. cold dressed weight will be paid on cattle exceeding the following cold dressed weights:—

| | |
|---|---|
| Rhodesia's Best ..... ..... ..... | 600 lbs. |
| Imperial ..... ..... ..... ..... | 600 lbs. |
| "A" Grade ..... ..... ..... ..... | 550 lbs. |
| G.A.Q. (Oxen) ..... ..... ..... | 650 lbs. |
| G.A.Q. (Cows) ..... ..... ..... | 450 lbs. |

**Grading of Beef for Local Consumption.**—Grading of beef for local consumption was carried out at Salisbury, Bulawayo, Umtali, Gatooma, Fort Victoria and Gwelo.

These services were regularly inspected by the Senior Meat Grader and found to be in order. The lower grades of beef were still in relatively short supply during the year.

**Retail Prices of Beef.**—Following on the increase in the price of cattle paid to the producer, new retail prices for beef were published on 1st November, 1949.

**Cattle Buying Permits.**—The Cattle Buying Permit system was maintained during the year.

An amendment to the order was published during the year, making it necessary for farmers who were also butchers to obtain permits for all cattle purchased.

**Disposal of Cattle in Native Reserves.**—As a result of heavy destocking in previous years, cattle in native reserves came through the season reasonably well.

The grading of cattle at the Native Department weight and grade sales was regularly inspected by the Senior Meat Grader.

A big step forward was made during the year, through the appointment by the Native Department of one permanent grader.

**Fattening of Cattle.**—The campaign for fattening cattle in the maize areas was continued during the year. A considerable increase in the number of cattle to be stall-fed will be necessary before the seasonal fluctuations in supply can be overcome.

It is expected that the new price structure in force since 1st November and the increased bonus paid for weight will encourage feeding of steers in greater numbers during the dry season.

Provision of more cold storage space in addition to stall-feeding is urgently required in order to ensure a more even distribution of meat throughout the year.

**Cattle Slaughter Control Order.**—The Cattle Slaughter Control Order operated satisfactorily during the year. As a result of difficulties in certain areas in connection with the sale of breeding stock some measure of relaxation was granted in order to enable farmers to sell mature breeding stock for slaughter.

**Importation of Cattle.**—The local demand for pedigree stock and high grade dairy animals remained at a high level and the following importations of stock were made from the Union of South Africa by farmers and the Livestock Improvement Committee of the Department of Agriculture.

Pedigree stock can be imported in any number, but only a very small number of grade dairy stock can be imported from the Union.

The small quota of grade dairy stock allocated to Southern Rhodesia by the Union of South Africa is far below the country's requirements.

REGISTERED STOCK IMPORTED FROM SOUTH AFRICA.

| Breed | Bulls | Females | Total |
|---|---|---|---|
| Afrikander | 264 | 342 | 606 |
| Friesland | 27 | 65 | 92 |
| Guernsey | 4 | 9 | 13 |
| Jersey | 19 | 60 | 79 |
| Red Poll | 6 | 5 | 11 |
| Shorthorn | 55 | 58 | 113 |
| Sussex | 14 | — | 14 |
| South Devon | 7 | — | 7 |
| Aberdeen Angus | 15 | — | 15 |
| Herefords | 88 | 17 | 105 |
| Brown Swiss | 4 | — | 4 |
| Ayrshire | 7 | 2 | 9 |
| North Devon | 11 | 4 | 15 |
| Total | 521 | 562 | 1,083 |

GRADE STOCK IMPORTED.

| Breed | Bulls | Females | Total |
|---|---|---|---|
| Afrikander | 1 | 5 | 6 |
| Frieslands | — | 171 | 171 |
| Guernsey | — | 9 | 9 |
| Jersey | — | 97 | 97 |
| Total | 1 | 282 | 283 |

**Dairy Cattle.**—Although the production of dairy products has shown a marked improvement, demand is still in excess of supply.

Good dairy cattle are very difficult to obtain and the small quota allowed by the Union Government makes the supply of good grade dairy stock very far below the demand.

During the year an investigation into the possibilities of importing grade dairy stock from New Zealand and Australia revealed the following facts:—

Grade dairy stock of high quality is available in both Australia and New Zealand at very reasonable prices, but the cost of transporting these animals to Southern Rhodesia is very high, resulting in an estimated landed cost of £100 and £125 per head from Australia and New Zealand respectively. This compares very unfavourably with the cost of locally produced animals and importations from South Africa. Under the circumstances grade dairy stock could only be imported from these countries under heavy subsidisation, which could not be justified.

**Pig Industry.** The pig industry is still experiencing a difficult period, essentially as a result of the high cost of feeding stuffs and the shortage of animal proteins.

Production of pig products during the year again indicated a tendency to increase. New prices for all classes of pigs became effective during the end of October, and the following prices are being paid at present:—

**Baconers:** Grade A, 1s. 4d. per lb. c.d.w.; Grade B, 1s. 2½d. per lb. c.d.w.; Grade C, 1s. 0½d. per lb. c.d.w.

**Porkers:** Grade A, 1s. 5½d. per lb. c.d.w.; Grade X, 10½d. per lb. c.d.w.

**Larders:** Grade A, 10½d. per lb. c.d.w.; Grade X, 7d. per lb. c.d.w.

Representations were made during the year by the National Pig Producers' Co-op. that bacon pigs and porkers should also be roller marked. The Pig Industry Board supported the suggestion and on their recommendation the roller marking of porkers and baconers was introduced during the year.

**Sheep.**—Interest in sheep farming still remains indifferent. Sheep can form a useful sideline on every farm and farmers have been urged to run small flocks of sheep to supply their own meat requirements and produce a few for sale. If promising results are obtained from experiments at present in progress, it may stimulate more interest in sheep farming.

## MATOPOS RESEARCH STATION.

Although the total rainfall for the period under review was slightly above average, farmers in Matabeleland sustained heavy stock losses through poverty. This may largely be ascribed to the bad distribution of the rainfall, the failing of underground water and exceptionally cold spell experienced during winter and early spring. Results obtained from our researches in beef production indicate that production under ranching conditions can be increased very considerably by improving the standard of cattle management in both Native Reserves and on European-owned farms.

**Livestock.**—As a result of the large increase in numbers of experimental cattle, the herds of pure-bred Afrikanders and Red Polls were greatly reduced. Only the best cows were retained for breeding purposes.

## RESEARCH.

1. **Cattle Breeding Experiments.**—Notwithstanding the severe drought experienced during the latter half of the year under review, the large-scale cattle breeding experiments were continued with very few losses.

From the results obtained, it was shown that under ranching conditions the genetic variations between the different breeds under observation are to a large extent obscured by the prolonged nutritional deficiencies of our winter pastures.

As sufficient data is available on the growth and development of the F.1 steers resulting from the different systems of breeding under ranching conditions, the following experiment was com-

menced on the 13th September, 1949, to determine the differences in the growth rates of the various breeds in question:—

Ten animals of each breed are being treated as follows:—

Group I.—On a high plane of nutrition from birth until slaughter weight (1,200 lbs. live weight) is reached.

Group II.—On a high plane of nutrition to 12 or 15 months of age, after which they are put on a low nutritional level until slaughter weight is reached.

Group III.—On a low plane of nutrition until 12 or 15 months old when they are put on full feed.

Group IV.—On a low plane of nutrition up to the age of slaughter.

Age is being used as basis in determining the level of nutrition, i.e., the steers on the high plane of nutrition are fed to reach 1,200 lbs. live weight at approximately two to two and a half years of age, whilst those on the low nutritional level are allowed to make small increases in weight so as to be ready for slaughter at between five and six years of age.

In the low-high group the animals are kept on a sub-maintenance ration to reach 300 lbs. live weight at 12 to 15 months of age. After this they are well fed.

Through these studies it will be possible to determine the following factors which are of fundamental importance in the development of a sound beef industry:—

(1) The variation in maturity between the different breeds.

(2) The type of beast best adapted to our low rainfall areas for the production of feeders under intensive farming systems.

(3) Age at which to fatten different breeds.

(4) Costs involved to fatten various breeds and crosses.

(5) Age as a factor influencing quality in beef in different breeds.

2. **Nutrition Studies.**—The investigation on the influence of the seasonal fluctuations in the nutritive values of our natural pastures on the growth and development of Hereford steers has been completed and it is anticipated that the results will be published in the near future. The studies determining the degree to which beef production is influenced adversely by the low standard of management prevailing in the Native Reserves are nearing completion.

3. **Sheep Experiments.**—The sheep experiments were continued and from the results obtained it is clear that the different breeds vary greatly in their ability to adapt themselves to local conditions.

Pneumonia appears to be a limiting factor in the breeding of pure-bred Wiltshire Horn sheep.

Studies are also being conducted to determine the variations in the breeding seasons of pure-bred Blackhead Persian and cross-bred ewes.

4. **Dairy Research.**—Favourable progress was made with the analysis of the official milk records from various producers in the Colony and the results should be ready for publication towards the end of 1950.

## MARANDELLAS RESEACH STATION.

The grade Friesland herd on Grasslands has been reduced in numbers, retaining only the best animals for future use in dairy production work. The production of this herd remained at a high level. The Shorthorn herd has also been reduced in an effort to produce more uniform animals for use in the mineral deficiency experiments.

## RESEARCH.

**Mineral Deficiency Experiment.**—This experiment is a preliminary investigation to determine the major deficiencies prevalent on granite areas in the high rainfall belt.

The indications are that more than one deficiency exists and the present set-up of the experiment will not be able to detect a combination of deficiencies. The extension of the work is limited by available land and suitable animals and will have to be undertaken over a number of years.

**Native Cattle Experiment.**—The studies on the growth and development of native cattle under different systems of management and different levels of nutrition is progressing satisfactorily, and the first groups should be ready for slaughter during the coming year.

**Different Planes of Nutrition.** -This experiment is conducted with Shorthorn steers on four different planes of nutrition. The high plane of nutrition group was slaughtered in September, 1949, at 22 months of age, giving a cold dressed weight of 63 lbs.

**Demonstrations and Visits.** This branch again had the privilege during the year to discuss the research programme in progress with several scientists in animal production who visited the country.

Professor Waddington of Edinburgh has also taken a lively interest in the work and offered to assist in the analysis of results.

**Other Activities.**—During the year the Acting Chief Animal Husbandry Officer served on the following committees:—

Divisional Co-ordinating Committee

Livestock Improvement Committee.

Cattle Sales Permit Committee.

Pig Industry Board.

In addition, numerous visits and inspections were carried out to farms in connection with stud book registrations, livestock improvement subsidies and advisory work.

J. C. RAATH,
Acting Chief Animal Husbandry Officer.

# Summary of Annual Report of the Horticulturist for the Year ended 31st December, 1949

This has been a difficult year for the Horticulturist. Due to the drought and severe lowering of the water table, acute shortages of vegetables occurred owing to many of the larger growers' water supplies declining, which put them out of production for several months. Appeals were made to those who had water for irrigation to produce vegetables in greater quantities to offset shortages from other areas, but the great scarcity continued and shortages lasted for eleven months of the year. Prices for fresh vegetables soared to previously unheard of heights, with demands further accentuated by the large numbers of immigrants entering the Colony.

Owing to the rains commencing very late in the season, Salisbury and Bulawayo were obliged to import large quantities of poor quality vegetables from the Union during early summer.

**Climate Conditions.**—The winter was extremely mild and, except for a few ground frosts, no severe or very damaging ones were experienced. Unusually high temperatures for the time of the year occurred in spring. Deciduous fruit trees blossomed most profusely, but the heat caused many of the blossoms to dry up before they became fertilised. A few scattered hailstorms caused slight damage to young fruits, while a very severe one at Melsetter later in the year caused much havoc to apples and trees.

**Citrus.**—The declared sales of locally grown citrus, including fruit used for processing for the year 1947/48 are as follows:—

| Oranges | Lemons | Grape Fruit | Other | Total |
|---|---|---|---|---|
| 286,140 | 5,023 | 5,692 | 2,688 | 299,543 cases (75/85 lbs.) |

These figures show an overall total of approximately 76,000 cases over the previous year, and the highest production so far attained in this country.

The number of citrus trees recorded in 1947/48 was: Bearing trees, 152,718; non-bearing, 51,429; an increase of 1,900 trees over the previous year. The shortage of nursery trees continued.

One million fifty-two thousand four hundred and ninety lbs. of citrus fruit valued at £6,095 were inspected.

Three hundred and seventy thousand five hundred and ninety-one lbs. of citrus fruit from three producers valued at £1,711 were exported during the year. This represents only slightly more than half the previous year's export.

**Deciduous Fruit.**—The number of deciduous fruit trees in 1947/48 totalled 130,132. This shows an increase of 14,564 trees over the previous year. Almost half the deciduous fruit trees have not yet reached the bearing stage.

Imports of deciduous fruit for 1948 total 2,466,724 lbs., valued at £52,087, an increase of 61,758 lbs. and £1,061 in value.

**Local Fruit Supplies and Demand.**—Deciduous and berry fruit crops were on the whole poor. Regular or plentiful supplies of fruit at reasonable prices were unprocurable. Distribution needs to be considerably improved. Very much larger quantities of locally produced early plums, peaches, apples, pears and berries are needed.

Except for a few larger producers who supply distant markets and who grow, grade and pack well, too many growers still have to learn that such methods are worth while. Local fruit, unless of high standard, is almost unsaleable in competition with imported fruit.

Fruit fly attacks were very light or completely absent.

The future of the deciduous fruit industry is particularly bright, provided growers do not over-reach themselves and plant more trees than can be reasonably cared for.

**Sub-Tropical Fruit (Citrus excluded).**—Fifty-eight thousand three hundred and fifty-six sub-tropical fruit trees were recorded, an increase of 14,079.

Imports of sub-tropical fruit valued at £32,171 were made, a decrease of £927.

**Vegetables.**—Fresh vegetable imports were 1,613,422 lbs., valued at £15,531, £858 less than for 1947.

Imports of onions at 2,068,958 lbs. (value £16,383) showed a considerable increase of 634,327 lbs. over the previous year. Local production is low.

A boron deficiency of beetroots, causing arrested growth and dead sunken patches on the sides of the roots was recorded. Applications of one ounce of borax per 100 feet of row corrected the trouble.

**Tung.**—No new interest was shown by growers.

**Nurseries and Planting Material.**—Thirty nurseries were registered under the Plant Protection Act, the same as last year. Plant material valued at £15,300 was imported. Most nurserymen only handle and distribute stock imported from South African nurseries.

## RHODES INYANGA ORCHARDS.

Good progress continues to be made in bringing about a higher standard of orcharding. Following the building up of soil fertility and the introduction of improved methods of pruning, a great improvement in the performance and growth of the older trees is apparent.

**Fruit Crop and Sales.**—A very poor blossoming in 1948, followed by an extremely dry January, caused a very light crop. The total crop sold, mostly apples, but including some pears, plums, quinces and peaches was approximately 1,150 bushels (40 lbs.) Wide distribution of marketing was carried out.

## EXPERIMENTAL WORK.

**Pruning.**—What was considered good pruning pactice ten years ago has had to be abandoned in favour of individual specialised treatment to ensure that fruiting laterals are built up at any early age, and to promote and maintain annual leader growth; this particularly applies to the tip-bearing varieties.

Good results were obtained by early summer pruning of strong leader growths to get lazy buds to grow and to produce laterals. The indications show that by summer pruning, two years' growth can be obtained in one and that it is not necessary to waste the trees' energy in unnecessary production of wood instead of fruiting spurs.

Trials carried out with 25-year-old pear trees of an unsuitable variety, regrafted over to William Bon Cretien, have proved successful. Within 1½ years the trees have each yielded an average of half-bushel of pears.

Apple trees that failed to make sufficient low fruiting side branches to shade the main stems from sun scald effects have also responded to grafting back to the first branches. These trees showed renewed vigour and slight loss of crop. Such trees have had a clean start from apple mildew disease.

A series of experiments were carried out in conjunction with the Branch of Plant Pathology in disease control and the estimation of possible mineral element deficiencies.

The vigorous volunteer weed growth formed during the rains provided the main cover crop. It has been very satisfactory where constantly mown, and provided the necessary humus forming material where sufficient plant food (manure or fertiliser) was applied. Indications are that provided the soil can sustain heavy cover crops good tree growth is produced.

The East Malling Paradise apple roots stocks for trial have become well established and produced additional suckers for propagation. Type XVI is very prone to delayed foliation.

## SUB-TROPICAL EXPERIMENT STATION, UMTALI.

Staff changes held up much of the work, but good results were obtained in spite of no nurseryman being available. By the abandonment of the less accessible areas on the Portuguese border, improved running of the more intensive cropped land was possible.

Rainfall recorded for the year was 23.75 inches.

**Deciduous Fruit.**—The peach and plum crops were good, but fruit fly attacks, in spite of bait spraying, were very difficult to control. This is probably due to there being fruit of various kinds always in season and that egg laying continues throughout the year. Bird damage was very serious in spite of the employment of boys for bird scaring. As many of the apple varieties have proved unsuitable, interplanting of proved varieties was carried out.

**Sub-Tropical Fruits:**

**Avocado Pears.**—Best results were obtained from the Collison variety.

**Mangoes.**—The mango crop was good, due to timely spraying with lime sulphur at 1 per cent. dilution and applied during flowering. No scorching occurred. Records of yields and flavour of the named varieties were kept.

**Pineapples.**—Owing to poor returns and small-size fruits the pineapples were planted on new land.

**Berry Crops.**—Further selections of strawberry plants from the "Salisbury" strain were made. No virus disease was apparent. It was not possible to record yields but big crops of this variety were obtained by commercial growers. The leading British variety "Auchincruive Climax" has not proved satisfactory and made little growth.

**Litchis.**—Excellent crops were obtained, the variety Rose-scented averaging 42 lbs. of fruit per tree, while the variety Mazuffepore averaged 35 lbs. per tree.

**Oyster Nuts** (*Telfairia pedata*).—Heavy crops were produced from plants grown over trees. Planted in 1946, one plant has produced 363 lbs. of nuts in 19 months since bearing commenced.

**Pecan Nuts.**—Planted in 1930 the varieties Success and Gold-mine have given the most constant yields. Three trees of each variety produced a total of 20 lbs. and 15½ lbs. of dry nuts.

**Tung** (*Aleurites montana*).—The average yield from the 12 best ten-year-old trees was 135 lbs. The dried tung nut seed was sold to a Union mill for £40 per ton.

**Miscellaneous.**—Seed of Bursera (that produces Linalos oil) was imported from India and many young plants were raised. Some interest is being shown in turmeric and peppermint.

Vegetable trials, using many kinds and strains of seed were carried out.

The Concord and Isabella Grape varieties did well.

**Advisory Work.**—Judging of fruit, flowers and vegetables was carried out at nine horticultural and agricultural shows. Horticultural educational and technical exhibits were staged at the Umtali and Salisbury Agricultural Shows.

**Staff.**—An Assistant Horticulturist was appointed and assumed duty in August.

C. W. HAYTER,
Horticulturist.

# Summary of Annual Report of the Chief Pasture Research Officer for the Year ended 31st December, 1949

**Grazing Conditions.**—While the 1948/49 rainfall was generally below average and the season most unfavourable for crop production, the growth made by the veld herbage appeared to be above normal in most areas, as the unusual distribution of the rainfall apparently favoured the free seeding of the grasses. While grazing conditions during the growing season, particularly in the early part of the season were satisfactory, with the onset of the dry season, however, it soon became apparent that the feeding value of the mature veld herbage was well below normal, and cattle losses from poverty, in the sour and mixed veld areas were abnormally high. The position was aggravated by the late onset of the 1949/50 rainy season and a general shortage of water for stock. Losses of native cattle in the Reserves, although these are more heavily stocked, are reported to have been not abnormal.

The losses of European ranch cattle are reported to have been as high as 20 per cent. in certain instances (accurate figures are not yet available), and undoubtedly the beef industry received a very severe set-back.

Associated with the unusually free seeding of the veld grasses, accidental veld fires were exceptionally severe in the latter half of the year. It is realised that the control of veld fires is an expensive and difficult matter, under conditions such as we have in Rhodesia. The making of more and better fire-breaks, however, should receive far more attention than it does, as yet, on the average farm.

**Pasture Research Stations.**—Pasture investigational work is now being carried out at five stations. At three of these stations, pasture research is an important section of the activities and at two (Grassland Research Station, Marandellas, and the Archie Henderson Research Station) the Senior Pasture Research Officer is also the Officer-in-Charge of the Station. The remaining two stations are pasture sub-stations, the one at Nyamandhlovu being attached to the Matopos Station and the Melsetter sub-station to the Marandellas Station.

Plans for the development of a low-veld station to serve the arid ranching areas, where veld deterioration is becoming an increasingly serious problem, have had to be left in abeyance until the necessary increase in staff can be provided.

**Matopos Research Station.**—The main research activities in connection with the conservation and improvement of pastures in Matabeleland, and for the drier conditions in the Colony, is centred at this station. Special stress is being laid on veld investigations of which there are two main types represented on the station: "mangwe" tree veld on the granite sand formation

and "thornveld" on the heavier and more fertile schist soils. Some three thousand acres of veld are in use in these experiments and the programme of work is the most comprehensive of its kind for any station in Africa. Attention is also being paid to the possibilities of establishing more productive planted pastures both under dry land conditions and under irrigation.

Points of particular interest which have already been ascertained are the rapid rate of deterioration of the veld if misused; the improvement in the grass cover and increased carrying capacity which results if the bush is thinned out and from the use of the mower; and the value of fire, if correctly used, in the control of scrub encroachment.

During the year the first 146 steers purchased for the grazing experiments were slaughtered off the veld at about 4½ years of age. They averaged 552 lbs. cold dressed weight and graded mostly Imperials and Standard A. A group of experimental steers from the Grassland Research Station, Marandellas, also off the veld and about the same age, were slaughtered in the same month and averaged 647 lbs. cold dressed weight. Although the veld at Matopos is of a "sweeter" type, the short growing season adversely affects the growth curve of cattle very appreciably.

Further extensions were made to both the irrigation and dry land grass nurseries and a number of the more promising species were established on a field scale.

Good progress was also made with development work on the station. Of special interest, perhaps, is the progress made in the installation of 12 tank lysimeters and run-off tanks to measure the run-off, soil loss and rainfall percolation under varying conditions of use of the land. No reliable information of this nature is available for Rhodesian conditions at present.

A number of very successful "Pasture Days" were held for parties of farmers from Farmers' Associations in Matabeleland and much interest was shown in the pasture work by a large number of visitors on the occasion of the Station's annual Farmers' Day.

**Grassland Research Station, Marandellas.**—The present organisation and programme of veld and pasture research work was initiated at this Station in 1945. Previously some useful experiments had been carried out in connection with the responses of the natural veld to various fertiliser treatments, as well as on the improvement of the vlei pastures. The main soil types of the station are granite sands of very low fertility, due largely to excessive leaching.

The research programme covers many phases of the main problems of the proper utilisation and management of the natural veld pasturage, and of the establishment of more productive planted pastures to supply feed of better quality and to regenerate soil fertility, following the depleting effects of annual cropping. Special attention is being paid to the improvement of the vlei pastures, which form so prominent a feature of the high lying granite country, enjoying a good rainfall.

Good progress during the year can be reported with the pasture research programme, and a number of new experiments were laid down. Planted pastures of the star grasses, from East Africa, have given the best results on dry land, in providing better quality feed and greatly increased carrying capacity, in comparison with the natural veld pasturage. In vlei land, excellent results have been obtained with the paspalum grasses, if properly fertilised. Many other promising grasses are under trial. Very marked responses have been obtained with applications of phosphatic fertilisers, heavy dressing of nitrogen and certain minor elements, including magnesium, manganese and copper. Fertiliser costs, owing to the very high price of nitrogen fertilisers, are the main difficulty. The problem is therefore essentially a question of cheap nitrogen being made available to the farmer (until such time as suitable pasture legumes can be found).

Interesting results are also being obtained from the veld experiments. The use of the mower in maintaining and improving the grass cover, and in controlling scrub regrowth on cleared land, has been amply demonstrated. Veld burning on the other hand, has been an ineffective means of controlling scrub regeneration satisfactorily in "msasa" tree veld, where thinning of the tree growth to parkland conditions greatly improves the grass cover.

A good deal of development work was also completed during the year, including building carried out departmentally, water development, fencing of experimental paddocks, tree clearing and stumping, etc.

The number of visitors to the Station again showed an increase. Successful pasture exhibits were staged at the Salisbury Agricultural Show and three of the District Shows. It is, however, gratifying to report not only an increasing interest on the part of farmers in the pasture work of the station, but also a marked extension of pasture improvement on farms, on the lines developed at the Grassland Research Station.

**Archie Henderson Research Station.** As mentioned previously the main aim of the pasture work at this Station will be to explore the possibilities for the use of ley pastures in the cropping system. The Station is situated on the main Maize Belt, where productive ley pastures offer the most promise in maintaining soil fertility, and in improving conditions for mixed farming. A large scale grass nursery, which can be irrigated, is also being developed, not only for supplying material for experimental purposes, but also as the main source of material for I.C.A. grass nurseries and for distribution to farmers. With its fertile soil and plentitude of water, the station is ideal for this purpose.

**Nyamandhlovu Pasture Sub-station.**—This sub-station of the central station at Matopos has the distinctive soil types of the extensive areas in the north-west of the Colony, on the Kalahari and Forest Sandstone formation. The veld types are very different from these in the rest of the country, and the problems differ accordingly.

During the year rapid progress was made with development work, and in the expansion of the experimental programme. The investigations deal more particularly with the proper utilisation of the different types of veld, a difficult problem, owing to the prevalence of "umkouzaan" on certain types. Promising results are also being obtained with planted pastures of the more drought resistant grasses.

The rainfall during the past two seasons has been very much below normal, and drought killing of the indigenous perennial grasses has been widespread. Their place has been taken by less valuable species, and in certain areas annual legumes, some species of which have given rise to cases of *Crotolaria* poisoning in cattle in the district.

**Melsetter Pasture Sub-station.**—This sub-station is attached to the central station at Marandellas and is being developed to serve the high rainfall Eastern Border area, where the pasture problems are quite unique. With a comparatively well distributed rainfall, the conditions offer the most promise for establishing without the assistance of irrigation, productive dairy pastures. Due to the favourable conditions for plant growth, rapid deterioration of the natural pastures through scrub encroachment, is also a serious problem.

The experimental programme deals mainly with the development of high quality pastures in order to determine the possibilities for dairy farming in the district, and the management and correct utilisation of natural veld which cannot be ploughed owing to the steepness of the slopes and broken or rocky nature of the ground. A large nursery has been established, and over a hundred species of grasses and pasture legumes planted. Veld experiments to study the effects of burning at different times of the year in the control of scrub growth, and various systems of grazing management have been laid down. A good start has been made in building up a working herbarium of the local flora.

**Pasture Research Chemist.**—This officer, a member of the staff of the Chief Chemist, is responsible for the design, much of the work and interpretation of the data of many of the experiments being carried out at the pasture stations and particularly the Grassland Research Station.

During the year, 329 samples of plant material, soil and blood were analysed, involving 1,219 separate determinations.

**Advisory Work.**—A number of meetings of Farmers' Associations were attended, chiefly by the Chief Pasture Research Officer, and talks given on various aspects of pasture improvement.

One Pasture Research Officer stationed at Grassland Research Station was made available during the greater part of the year for pasture advisory duties with the field staff in Mashonaland of the Conservation and Extension Services.

**Native Reserves and Areas.**—Two Pasture Research Officers have been appointed for advisory assistance to the Native Depart-

ment staff in connection with the reclamation and improvement of the grazing land of the Native Reserves and Areas. One officer is stationed at the Grassland Research Station, Marandellas, and the other at the Matopos Research Station.

**Grassland Survey.**—With the assistance of the field staff of the Conservation and Extension Service, a scheme for mapping of grassland types of the Colony has been started. It is hoped to complete a grassland map of the Colony during 1950.

**I.C.A. Grass Nurseries.**—The Pasture Stations have assisted with advice and in supplying planting material for the development of a grass nursery in each I.C.A. area. These nurseries should assist materially in meeting the demand for grass roots of varieties which cannot be established from seed. This demand has increased very greatly in the last few years.

**Visit to Australia.**—Arrangements have been made for a Senior Pasture Officer to visit Australia, to study pasture research and improvements methods there. Conditions in the summer rainfall areas of Australia are similar to those in Rhodesia and a great deal of research is in progress there, including extensive trials with pasture legumes obtained in the Southern Hemisphere, particularly South America.

**Standing Committee on Agricultural Production.**—The Chief Pasture Research Officer continued to act as Chairman of this inter-departmental Committee, which came into being as the result of the "Five-Year Plan," compiled by a committee of the Department of Agriculture. This short-term plan for increasing production of food crops was revised by the Standing Committee after consultation with Professor Sir Frank Engledow and Professor Leppan and later published as part of the Second Interim Report of the Development Co-ordinating Commission. Amongst many other matters dealt with by the Committee during the year was the draft report of Sir Frank on the long-term agricultural policy for Southern Rhodesia.

R. R. STAPLES,
Chief Pasture Research Officer.

# Summary of Annual Report of the Chief Tobacco Officer for the Year ended 31st December, 1949

**Seasonal Conditions.**—Seasonal conditions proved difficult throughout the Colony. The rainfall as a whole was erratic and total precipitation was well below the normal. Good rains fell during the latter half of October and the latter half of November and early December, and made it possible for most growers to plant a fair acreage to tobacco. During November-December the rainfall was fairly general and planting operations were conducted over a wide area. January was very dry and caused much anxiety, especially in the Northern areas where large numbers of ex-servicemen settlers have taken up land under the Government Land Settlement Scheme. Fortunately, however, good soaking rains fell on 29th January and continued into February and saved what had become a rather serious situation in these areas. Late planted tobacco grew well in areas where scattered showers fell over the period 9th February to mid-March followed later by heavier rains.

The quality of the Virginia flue-cured and fire-cured crops was reduced by dry weather occurring at the critical period of plant development. The planting of Turkish type tobacco was seriously curtailed because of adverse seasonal conditions coupled with the prevailing shortage of native farm labour. The shortage of native labour on farms continues to be acute and has seriously hampered the harvesting of crops. In some cases an appreciable quantity of tobacco remained unharvested—especially the Turkish type. The greatest difficulty in obtaining labour was experienced by new settlers who commenced farming operations this year. Many established farmers also had to curtail their crop programme because of the labour shortage.

There were 1818 growers of Virginia type tobacco registered under the Tobacco Marketing Act, Chapter 166, compared with 1,661 growers registered in the 1947/48 season. In terms of the Turkish Tobacco Act, 1946, there were 755 growers of Turkish tobacco registered this year compared with 1,325 growers in the previous season.

The total area planted to all types of tobacco amounted to 128,643 acres compared with 118,617 acres planted last year. The aggregate is made up of 125,968 acres flue-cured tobacco, 1,524 acres fire-cured tobacco, and 1,151 acres of Turkish. In comparison with last year the acreage under flue-cured tobacco increased by 13,363 acres and fire-cured by 298 acres, while the Turkish tobacco crop decreased by 3,499.

The yield of tobacco harvested during the season was 82,388,479 lbs. flue-cured, 850,933 lbs. fire-cured, and 367,336 lbs. Turkish tobacco, thus bringing the combined total production to 83,806,748 lbs., representing an increase of 5,889,551 lbs. over last year's crop.

**Disposal and Export of Southern Rhodesian Tobacco.**—Sales of Virginia type tobacco over the auction floors amounted to 81,716,411 lbs. flue-cured tobacco which realised £10,849,086, or an average of 31.86 pence per lb. The weight of fire-cured tobacco sold was 838,669 lbs. valued at £61,376, or an average of 17.56 pence per lb.

There was no consignment of tobacco by growers direct to overseas markets during the year.

Receipts for Virginia type tobacco therefore amounted to £10,910,462, compared with £10,185,066 received by growers for last year's crop.

The weight of Virginia tobacco exported to Priority markets was 54,153,000 lbs. flue-cured and 257,396 lbs. fire-cured, making a total of 54,410,396 lbs. despatched to these markets. The exports to Non-Priority markets were 11,321,000 lbs. flue-cured and 273,937 lbs. fire-cured tobacco. Altogether 66,005,333 lbs. of Virginia type tobacco was exported from the Colony during the year. The number of export permits issued for Virginia tobacco was 2,744 and 81 for Turkish tobacco.

In terms of the London Agreement, the Tobacco Advisory Committee notified the Southern Rhodesia Tobacco Marketing Board that the United Kingdom manufacturers were prepared to take a further 15 to 20 million lbs. over and above last year's figure of 46 million lbs. It was subsequently agreed that the British manufacturers take 56 millon lbs. from the 1949 crop and the four following crops. At the same time they stated their willingness to take more tobacco if it was available.

Later in the year two members of the Tobacco Advisory Committee visited the Colony and had several discussions with the Southern Rhodesia Tobacco Marketing Board, as the result of which the producers of flue-cured tobacco have undertaken to increase their output. Production is to be increased each year, and by 1953 the crop is expected to reach the 120 million lbs. mark.

An agreement on similar lines to the London Agreement has been entered into with Australian tobacco manufacturers.

Because of these agreements it has been necessary to continue with export control measures introduced last year to ensure delivery of the allotted quotas to priority markets. Import licences regulating United Kingdom manufacturers' purchases during 1949 were issued by the Board of Trade in Great Britain.

Export permit allocations were dealt with by a committee appointed by the Southern Rhodesia Tobacco Marketing Board.

The final allocation of flue-cured tobacco was as follows:—

| | |
|---|---|
| Great Britain ..... ..... | 66.66 per cent. of the crop. |
| Union of South Africa | 5.00 ,, ,, ,, ,, ,, |
| Australia ..... ..... | 6.50 ,, ,, ,, ,, ,, |
| Local Market ..... ..... | 4.00 ,, ,, ,, ,, ,, |
| Other Priority Markets | 9.35 ,, ,, ,, ,, ,, |
| Non-Priority Markets..... | 8.49 ,, ,, ,, ,, ,, |
| | 100.00 per cent. of the crop. |

According to final returns rendered after the close of the sales, the weight of tobacco purchased for these markets was as follows:—

| | | |
|---|---|---|
| Great Britain ..... ..... | 52,483,625 = | 64.23 per cent. of total sold. |
| Union of South Africa | 4,072,215 = | 4.98 ,, ,, ,, ,, ,, |
| Australia ..... ..... | 4,441,501 = | 5.44 ,, ,, ,, ,, ,, |
| Local Market ..... ..... | 4,718,497 = | 5.77 ,, ,, ,, ,, ,, |
| Other Priority Markets | 6,238,134 = | 7.63 ,, ,, ,, ,, ,, |
| Non-Priority Markets..... | 9,762,045 = | 11.95 ,, ,, ,, ,, ,, |
| | 81,716,017 = | 99.99 per cent. of total sold. |

During the season some 1,686,939 lbs. of North-Western Rhodesia flue-cured tobacco was sold over the auction floors in Salisbury and realised £221,376, or an average of 31.50 pence per lb.

The Turkish tobacco crop is marketed through the Turkish Tobacco Co-operative Co., Rhodesia, Ltd., and the bulk of the crop was sold under contract to manufacturers overseas. It is estimated that the average price received by the growers was approximately 22 pence per lb. The weight of Turkish tobacco exported from the Colony amounted to 1,927,754 lbs., valued at £176,711 approximately.

Stocks of tobacco hessian remained limited, and it was necessary to continue with the rationing system introduced under the Hessian Order, G.N. No. 874 of 1947. Some 1952 permits were issued in the allocation of 487,891 yards of 54-inch by 10-ozs. hessian to tobacco growers.

**Research.**—The research activities of the Tobacco Branch have made steady progress during the year under review.

The Cigar Tobacco Experiment Station at Chipinga was opened in June and placed in charge of a Cigar Tobacco Specialist, who was appointed to the Tobacco Branch on 1st June, 1949. A preliminary inspection of land in the Mazoe Valley for the establishment of the Fire-cured Tobacco Experiment Station was also

carried out during the year, and it is hoped that the station will be opened in 1950.

On the Trelawney Research Station, the research programme dealing with the following has been continued: Crop rotation, spacing trials compost and manurial trials, use of Vermiculite for seed beds and transplanting, varietal trials including two eelworm resistant varieties, tobacco nutrition experiments in the field and pot cultures, and the use of plant hormones for control of sucker growth.

The beneficial effect of grass leys on the yield and quality of tobacco has led to increased attention to the use of grass as a rotation and a number of grasses are being tested for that purpose.

During the 1948-49 season three rotational experiments came under test tobacco, namely (1) a three-year course rotation of two seasons'crops followed by one year tobacco; (2) a five-year course of three seasons' crops followed by two years tobacco; and (3) a similar rotation on a red contact sandy soil. These experiments in the main confirmed previous findings:—

(a) Best quality tobacco was obtained following grass or fallow.

(b) A legume grown immediately prior to tobacco is detrimental to quality.

(c) Application of compost following crop rotations was beneficial to the following tobacco in the three-year course rotation.

In the spacing trials previous findings were confirmed, and a spacing 3-feet 6-inches x 2-feet appears to be most suitable for the sandy soils used for tobacco. Experiments this season were carried out using three different levels of nitrogen: but increasing the nitrogen above the usual 24 lbs. per acre for the 3-feet x 3-feet spacings and given as cups per plant for the closer spacings, which therefore received considerably more per acre but the same amount per plant, did not significantly increase yields or affect quality. The season was a very dry one, however, and in a wet season a different result may well have been obtained. The dry weather also probably affected results from the field experiments with fertilisers containing increased amounts of phosphate and potash comparable to American recommendations, as no significant differences as regards yield, quality or value were obtained from any of the treatments. Pot cultures are being used in studying the nutrition of tobacco and fixing the appropriate fertiliser applications for the many different types of soil on which tobacco is grown in the Colony. In the varietal trials the outstanding varieties were C.7 (a cross between Jamaica Wrapper and Bonanza), Bonanza, and Yellow Mammoth.

Root-knot nematode experiments were intensified in order to determine accurately the effective dosage of D.D. (1.3 dichloropropene and 1-2 dichloropropane) for the control of the pest in heavily infested seed-beds. The results clearly demonstrate that

a dosage of between six and eight c.c.'s per square foot is necessary. Results of the use of D.D. in tobacco lands are, as yet, inconclusive because no heavily infested fields were available for the experiment. However, two interesting observations were made: (1) that D.D. definitely minimised the loss of plants due to insect attack; and (2) that the D.D. treatment caused more rapid and vigorous growth of the plants and consequently fertiliser applications may have to be modified in cases where D.D. is to be used in the land. Further experiments with D.D. and other soil fumigants are in progress. Investigations are continuing in the use of certain cotton varieties as a trap crop for eelworm. Trials with B.H.C. (gamma isomer of benzine hexachloride) for the control of insect attack at transplanting were continued and previous results were confirmed. White grubs and wire-worms are effectively controlled by the application of B.H.C. 0.5 per cent. applied at the rate of from 18 to 24 lbs. per acre before planting.

Disease Control experiments are conducted by a member of the Plant Pathology and Botany Branch of the Department of Agriculture residing on the station. Owing to the very dry season, the incidence of plant disease was low, although all the more common diseases were present on a small scale. Spray experiments with several types of copper fungicides were inconclusive owing to the very slight disease incidence. It was found, however, that the adhering power of Bordeaux was superior to that of any other of the sprays tested. Laboratory work included isolation of *Alternaria* from diseased tobacco material and isolations from common weeds bearing spots of the *Alternaria* type. Studies on the effect of host nutrition on the susceptibility to this disease are being continued.

Engineering Research included comparative tests with several types of coal furnaces. A new type of wood-burning furnace was designed and proved successful under test. Experiments in direct heating of barns were carried out but proved unsatisfactory owing to the generation of toxic gases and dust from the fuel. Another furnace was designed and arranged for pre-heating air for barn ventilation. A new and more efficient type of conditioning pit has been designed and drawings will be available shortly. Preliminary experiments with a heat exchanger have been made and the results are promising. It is hoped from these experiments to obtain reduced curing costs, eliminate flue pipes and effect quicker curing. Field experiments which include varietal trials, fertiliser trials, rotations, priming and spacing trials, and disease and insect control, are also conducted on the Tobacco Experiment Station at Karoi. Similar experiments with Turkish tobacco are carried out on the Turkish Tobacco and Plant Breeding Station at Umgusa, Bulawayo. Due to a succession of unfavourable circumstances the amount of valid data collected is very small in view of the number of years the station has been open. The station has now been closed. The Cigar Tobacco Experiment Station projected by the Chief Tobacco Officer a few years ago was opened at Chipinga this season. The initial development was put in hand in July, 1949, and the programme of work laid down

comprises: Varietal trials with a number of seeds imported from United States of America, Canada, Sumatra, South Africa and Belgian Congo, and also several strains of locally grown tobacco. Time of planting, fertiliser trials, spacing trials, shade-grown and open plot trials, and curing and fermentation experiments. The results to date are encouraging and confirm the opinion long held by the Chief Tobacco Officer that the soil and climatic conditions in the Chipinga area are suited for cigar tobacco production.

With only one officer available for extension duties it has not been possible to fully comply with all requests for farm visits. During the year the Tobacco Officer made 542 visits to farmers, including 210 to ex-servicemen accepted under the Government Land Settlement Scheme. The Chief Tobacco Officer also visited a number of farms during the year under review and attended the Agricultural Shows held at Gatooma, Bindura, Umtali and Salisbury for the purpose of judging the tobacco exhibits. A number of Farmers' Association meetings were attended and addresses dealing with tobacco culture delivered.

D. D. BROWN,
Chief Tobacco Officer.

# Summary of Annual Report of the Dept. of Conservation and Extension for the Year ended 31st December, 1949

**Introduction.**—Eighteen months after the start of the new department, the record figure of 5,000 miles of contours pegged has been reached. Sixty-eight I. C. Areas have been declared, and a total of just on 500 dams constructed during the year.

**Policy.**—No significant change of policy occurred, but I.C.A. Committees and farmers generally are demanding more attention to farm planning and land use, and our services will have to be rapidly broadened to include all measures required to ensure maximum yields and sustained high fertility. Training of more officers to fit them for extension work must become a major part of our programme for 1950.

**Events of the Year.**—Two of the outstanding events of the year in review were the Congress of I.C.A. Committees held under the chairmanship of the Chairman of the N.R.B., and the visit to this country of Dr. Lowdermilk. The I.C.A. Congress adopted a code of 12 good farming principles and, in conjunction with the R.N.F.U. and R.T.A. and the Food Production Committee, commended them in an open letter to the farmers of Rhodesia.

Our grateful thanks are due to Dr. Lowdermilk for much valuable assistance and information.

**Extension Work.**—Only two Senior Extension Officers operated for the full year; a further two seniors and four junior extension officers were appointed towards the end of the year, but too late to accomplish much. Both Senior Extension Officers were in charge of Demonstration Farms in addition to other duties. Sixty-six meetings were attended and 441 visits made.

**Conservation Work.**—The number of visits carried out for all purposes amounted to 16,805, making an increase of 9,167 over the previous year's total, an average of 311 per officer.

**Works Pegged.—**

| | 1948 (miles) | | 1949 (miles) |
|---|---|---|---|
| Contours | 3,348 | | 5,296 |
| Drains | 164 | | 386 |
| Contour Drains | 36 | Grass Strips | 31 |

| | | |
|---|---|---|
| Pasture Furrows.. | 232 | 139 |
| Terraces ..... ..... | 30 | 77 |
| Irrigation Furrows | 63 | — |
| Total ..... ..... | 3,875 | 5,929 |

An increase of 2,054 miles.

Acreage protected: 148,225 acres, based on the figure of 25 acres per mile.

**Grand Total.—**

| | |
|---|---|
| Previously constructed ..... ..... | 22,306 miles. |
| Plus 1949 ..... ..... ..... ..... | 5,929 miles. |
| Total ..... ..... ..... ..... | 28,235 miles. |
| Acres previously protected..... ..... | 505,090 acres. |
| Acres 1949 protected ..... ..... ..... | 148,225 acres. |
| Total to 31/12/49 ..... ..... | 653,315 acres. |

**Works by I.C.A. Units.**—Twenty-six I.C.A. Committees operated their own equipment and carried out the following works:—

371 dams, 278 miles contours, 72 miles rebuilds, 9 miles drains, and 19 miles other works.

The combined capacity of the dams was 675 million gallons.

**Grouping I.C.A.s.**—To facilitate the allocation of units and administration generally, the following groupings of I.C.A.s was agreed upon by Committees and the N.R.B. and put into effect:—

Bulalima-Mangwe Regional Group,
Mzingwane ,, ,,
Umniati ,, ,,
Charter ,, ,,
Victoria ,, ,,
Eastern ,, ,,
Lomagundi ,, ,,
Mazoe ,, ,,
Gwaai ,, ,,
Gwelo ,, ,,
Umfuli ,, ,,
Shangani ,, ,,
Mid-Eastern ,, ,,
Upper Hunyani ,, ,,
Lower Hunyani ,, ,,
Marandellas ,, ,,

16 Groups in all, covering all declared areas.

**Conservation Works by Government Units.**—Only 14 Government units were in operation, due to much equipment being diverted for Drought Relief.

| Output | 1949 Miles | 1948 Miles | 1949 Hours | 1948 Hours |
|---|---|---|---|---|
| New Contours | 1,139 | 1,242 | 7,426 | 8,414 |
| Rebuild Contours | 89 | 180 | 447 | 884 |
| Storm Drains | 56 | 30 | 224 | 344 |
| Farm Roads | 78 | 185 | 271 | 1,146 |
| Strips | 13 | 7 | 221 | 88 |
| Dozing | — | — | 3,414 | 1,485 |
| Ripping | — | — | 1,136 | 1,080 |
| Stumping | — | — | 401 | — |
| Dame | — | — | 616 | — |
| | 1,375 | 1,644 | 14,157 | 13,441 |

Output of contours was 270 yards per hour, as against 259 for 1948.

**Chipinga Demonstration Farm.**—A dairy herd of 13 Jersey and 12 Frieslands has been started. Manager's house, stables, dairy, calf pens, dip tank, bull boxes, and implements shed have been completed; also 12 miles of fencing.

**Karoi.**—All essential buildings except the office block and pigsties are now completed.

The small Jersey herd and flock of Blackhead Persian sheep continue to do well. 200,000 bricks were made and a further 750 acres fenced.

421 visits were carried out in the area by the two Extension Officers during the year.

**Umshandige.**—The Friesland dairy herd kept in good condition despite the drought and produced from 2,126 to 3,000 gallons of milk per month. The sheep and poultry also continue to do well. Five miles of road were gravelled and a considerable amount of fencing erected. Labour was scarce and unwilling.

## GENERAL REPORT ON ALL I.C.A. AREAS.

**Climate.**—Rainfall was patchy and generally poor. Total rainfall was below normal with water supplies suffering severely. Temperatures generally above average.

**Crops.**—Planting conditions were bad in many areas, with all crops suffering more or less from lack of rain. All reports stress the need for rotations, fertilising, and better tillage methods to improve overall yields.

**Stock Feed.**—Report after report states that little or no attempt made by numerous farmers to provide winter feed for

stock. Losses from poverty in many areas were as high as 20 per cent.—mostly cows and calves and young stock. The need for adequate food reserves has again been brought home to us.

**Animal Husbandry.**—Beef cattle predominate and management is excellent in individual cases, but in most, stock take the place of an unimportant sideline with little attention given to breeding, management or the provision of feed reserves.

**Veld Improvement.**—High cost of fencing, lack of watering points, are the two limiting factors to good management, causing kraaling and herding, and much tramping of the veld. Grass fires are much more prevalent in Mashonaland than in Matabeleland. A general interest is now being taken in exotic grasses for grass leys.

**Afforestation.**—This is mainly confined to the commercial plantations of the Eastern Districts and a little gum planting on tobacco farms for fuel for curing. In regard to the latter, there is an increased interest.

**Experimental Work.**—To determine the suitability of special equipment, and to arrive at the best methods of using existing equipment, a great deal of experimental work was carried out.

**Propaganda.**—Farmers' days and demonstrations, monthly newsletters, talks at Farmers' Association meetings, excursions to adjoining I.C.A.s, Young Farmers' Clubs, and many other expedients have been used by Conservation Officers and Group Officers to keep interest alive and to disseminate useful propaganda.

**General.**—The Assistant Director expresses his thanks to members of the staff and to farmers and I.C.A. Committees, the Natural Resources Board, and allied departments for assistance and co-operation during the year.

C. A. MURRAY,
Assistant Director of Research and Specialist Services.

# Summary of Annual Report of the Chief Entomologist for the Year ended 31st December, 1949

Although the incidence of insect pests showed considerable variation in Southern Rhodesia in 1949, there was no activity of such an exceptional nature or proportion that it could be classed as a national outbreak. It is true that in September there was an unusually sharp rise in the number of recorded enquiries concerning insect pests, but these did not indicate a serious outbreak of any kind.

On the other hand, early in the year, rodents reached outbreak proportions in several widely separated areas, a development which was foreshadowed, but not forecast, in my report for 1948, in which they were recorded as digging out the planted seeds of maize and citrus towards the end of the year.

**Locusts.**—There has been neither record nor rumour of the presence of any stage of the Red Locust, *Nomadacris septemfasciata*, Serv., in the Colony. The International Convention for the Permanent Control of Outbreak Areas of the Red Locust was formally signed in London on 22nd February, 1949, on behalf of Belgium, the United Kingdom, the Union of South Africa, and Southern Rhodesia. The Convention provides for the formal continuance, for not less than ten years, of the International Red Locust Control Service, an organisation which has operated on a less formal basis from Abercorn, Northern Rhodesia, for several years with encouraging success.

There are no immediate prospects of an invasion into the Colony of Red Locusts, nor is an invasion in the 1950-51 growing season foreshadowed.

The African Migratory Locust, *Locusta migratoria migratoriodes*, Rcn. & Frm., is economically less important in Southern Rhodesia than is the Red Locust. An African Migratory Locust Convention similar to that relating to the Red Locust is in course of negotiation. Meanwhile, a provisional organisation exists.

**Army Worm.**—Although no reports of the presence of Army Worm, *Laphygma exempta*, Wlk., were received in 1949, reports early in 1950 indicated that some hatchings had occurred late in December.

**Pests of Cereals and Grasses.**—Among insect pests of maize, the incidence of the Maize Stalk Borer, *Busseola fusca*, Hmp., was rather above normal. In a test demonstrating and confirming the effectiveness of late maize planted in mid-January as a trap to attract the second generation of egg-laying moths, a heavy infestation by half-grown second generation caterpillars was found in the trap, as was expected, in March. The trap crop appeared to afford the earlier-planted main crop good protection. Before the caterpillars in the trap crop could mature, the plants were

cut and ensiled. It can be recorded with satisfaction that there were several enquiries in advance regarding precautions to be taken against the Maize Stalk Borer. Normally few, if any, enquiries are made before precautionary measures against the first generation are too late.

Grubs of the snout-beetle, *Dercodus recticollis*, Mshll., did considerable damage by boring in young maize plants in November, 1948, on a farm in the comparatively dry area north-west of Bulawayo. The adults emerged in January, 1949. A similar infestation by grubs was reported from the same general locality in December, in early planted maize. It is thought that somewhat later plantings, as normally advised against the first generation of Maize Stalk Borer, may effect avoidance of the pest. Our previous record of this insect refers to defoliation of young peach trees by the adults in the Bulawayo area in March, 1929.

Cutworms, *Euxoa segetis*, Schiff., reduced the stands on two large trial plots of maize on the Gwebi Experimental Farm in December. Infestation must have commenced before planting. In the series, these plots were the only two which had received extra humus, in one case a green crop still partly undecayed, and in the other, compost. Available information leaves room for doubt whether there had been weed growth to attract egg-laying moths before planting, or whether the added humus was directly responsible for egg-laying.

Very numerous adults of the Cetoniid fruit beetle, *Pachnoda rufa*, de Geer, were reported to be attacking the grain along its whole length in maize ears in Melsetter during February. It is not certain whether they initiate attack or are first attracted to openings made by weaver birds (Ploceidae) at the tips of the ears.

Reports of mammalian pests included spring hares, *Pedetes*, destroying young maize plants, baboons making away with ears of maize, and field mice, *Mastomys coucha microdon*, Peters., attacking the ripening and ripened ears of kaffir corn and maize standing in the field. The reports of field mice came from several widely separated districts. In Nyamandhlovu as many as 85 individuals were reported to have been dug from one burrow in maize lands. Even if several burrows were concerned, the report at least indicates a dense concentration. In the Sabi Valley, Africans described the activities of these rodents among the dried but still erect kaffir corn plants as sounding like elephants feeding among the crops. Reports continued from May until August, after which the last crops had probably been eaten or reaped.

*Paromius*, a species of the Lygaeid family of sucking bugs, attacked the ears of native grown cereals in the Gutu District in April. It had also been recorded on millet in January, but in the April outbreak its damage to rapoko (*Eleusine corocana*) was estimated by Native Department officials as high as 75 per cent. Heads of grain were poorly filled. Rice was less attacked but affected ears were "blind." Munga (*Pennisetum spicatum*), on which it was also present, was apparently not affected.

Seed dressings of coal tar emulsion have been advised and used successfully for some years against insects attacking maize

seed in the soil either before or after germination. In current experiments coal tar emulsions are being compared with dressings of BHC and DDT. Insect damage has been slight in all plots, including untreated controls, but the tests so far indicate at least that germination and early growth are not seriously affected by any of the treatments, apart from slight delay in germination caused, as previously, by the coal tar emulsions.

**Leguminous Crops.**—Apart from attack by such general pests as cutworms and eelworm (*Heterodera marioni*, Goodey), legumes are at present not the subject of many regular specific pests of a serious nature, though sporadic pests may sometimes cause very considerable damage. The sunn hemp beetles, *Exora discoidalis*, Jac., and *E. apicipenne*, Jac., which are regular serious pests of sunn hemp planted in November or most of December, were not reported in 1949. This is believed to be accounted for partly by the substitution of other green manure crops and partly by planting sunn hemp not much earlier than the turn of the year.

**Solanaceous Crops.**—Tobacco Leaf Miner, *Gnorimoschema operculella*, Zell., and to a greater extent Tobacco Stem Borer, *G. heliopa*, Lowr., were prominent among pests damaging growing tobacco from January to April. In most cases the initial infestation by the Stem Borer was, by inference, traceable to the seed-beds. The high price and comparative scarcity of seed-bed cloth, coupled with a reluctance on the part of many growers to use this protection on seed-beds or to include insecticides in their sprays, led to infestation of young plants in the beds and transfer of this infestation to the lands on planting out. The seed-bed infestation was probably due to failure to destroy the remains of the previous tobacco crop by mid-winter. Very heavy loss was sustained on some farms, where well grown tobacco was breaking off a few inches above soil level, the stems having been weakened at this point by the borers.

Severe attacks by Tobacco Budworm (American Bollworm), *Heliothis armigera*, Hubn., on tobacco seed heads in the field which had been bagged for seed-collecting were reported. Sufficient inspection for this pest prior to bagging as well as in subsequent routine inspections had apparently not been made. Infestation in the bags by Tobacco Aphis, *Myzus persicae*, Sulz., was also severe.

The blue blister beetles, *Cyanolytta pectoralis*, Gerst., and *C. subcoriacea*, Muls., were very numerous in the Hartley district during October and November, where in some cases they destroyed very young tobacco seedlings. They were also found to be feeding in large numbers on pigweed (*Amaranthus* sp.)

The large sand cricket, *Brachytrypes membranaceus*, Dr., damaged many young tobacco plants in the field in November. In some lands, control by introducing baits or fumigants into their burrows was impracticable because of the looseness of the dry sandy soil. Recourse was had to digging out the insects.

Experimental helicopter spraying of tobacco plants with parathion and other sprays by a commercial pest control organisation

was officially observed. Further work needs to be done on the distribution and direction of the spray on tobacco plants.

**Cruciferous Crops.**—The Cabbage Webworm, *Hellula undalis*, F., was responsible for the deformation or destruction of cabbages in November by boring into the stems. When damage is observed it is usually too late for control in the affected plants, which should be safely disposed of. The application of stomach poisons to the young plants is a useful precaution.

The incidence of Bagrada Bug, *Bagrada hilaris*, Burm., was noticeably sub-normal.

**Cucurbitaceous Crops.**—Pests of cucurbits, although present and limiting production (e.g., the Melon Flies, *Dacus*, spp.), showed no unusual activity.

**Cotton.**—Damage by insect pests of cotton, according to a progress report prepared by Messrs. A. H. McKinstry and R. James, of the Cotton Research and Industry Board's Research Station at Gatooma, was the lightest on record for many years, and the Colony's average acre-yield of seed cotton was above the normal. Tests with DDT and BHC against insect pests of cotton on the Station were inconclusive, possibly owing to the low incidence of pests.

**Fruit.**—Among fruit attacked by fruit fly, unusually late-ripening paw-paws (*Corica papaya*) were recorded as a host of *Pterandrus rosa*, Karsch., in March, by which time a dense population of these flies has usually been built up on other host fruits. In the same month, granadilla fruits were attacked by an undetermined species of fruit fly, but in no case in this fruit was the insect found to have developed far. Usually the fleshy layer beneath the skin of the fruit had isolated the damaged part by forming a cyst around it.

Young Mexican apple trees (*Casimiroa edulis*) are usually a favoured host of Soft Scale, *Lecanium hesperidum*, L. Infestation on a young tree at Glendale was noted to have been very considerably reduced by the predatory caterpillars of the Noctuid moth, *Eublemma costimacula*, Saalm., in November. Most of the mature caterpillars descended the trunk, typically having attached to their bodies the exuviae of the scale insects, which later formed part of the pupal cases. These were made near the base within the protection afforded by trash. The predators were heavily parasitised by Hymenoptera. Other scale insects included Red Scale, *Aonidiella aurantii*, Mask., on citrus and heavy infestation by *Tachardina* on various individual trees of custard-apple and pecan nuts.

There was only one report of Woolly Aphis, *Eriosoma lanigerum*, Hausm., which was found on apple trees near Salisbury in January. Grubs of the Cetoniid fruit beetle, *Pachnoda impressa*, Gold., were found to be exceedingly numerous in the soil of an Eastern Border garden, but damage by them was not specifically reported. The Nitidulid beetle, *Lasiodactylus iniquinatus*, Erich., was accused of primary damage to the fruits of

litchi in the field, though it is suspected that the damage was secondary.

Reports of attack by the Capsid bug, *Helopeltis sanguineus*, Pop., were confined to a few referring to guava and mango. Damage to fruit by this insect became widespread and frequent a few years ago, but has since subsided, suggesting a cycle. As the insect is little known and the damage, especially to guavas, is obvious and destructive, it would be expected that more enquiries would be received were the pest relatively abundant.

Attack by caterpillars of the False Codling Moth, *Argyroploce leucotreta*, Meyr., on sub-tropical fruits was almost negligible.

According to Dr. A. A. Morris, Chemist and Chief Technical Officer at the British South Africa Company's Mazoe Citrus Estate, citrus pests were of little economic importance on the estate, with the exception of Citrus Thrips, *Scirtothrips aurantii*, Faure, which developed with moderate severity in localised areas.

**Forest and Shade Trees.**—Ornamental *Pinus radiata*, *Cupressus* sp., and Norfolk Island Pine (*Araucaria excelsa*) were heavily attacked by the Araucaria Scale, *Erinococcus araucariae*, Mask., in various localities.

Cocoons of the Lasiocampid, *Pseudometa dollmani*, Tams, were found in thousands in wattle plantations on the Eastern Border. Many of them were parasitised by ichneumon and braconid wasps, and tachinid flies. The caterpillars have previously been reported as feeding on msasa (*Brachystegia spiciformis*).

The cutworm, *Euxoa segetis*, Schiff., destroyed large numbers of six-weeks-old *Cupressus torulosa* in a nursery in Salisbury. The Eucalyptus Borer, *Phoracantha semipunctata*, F., was reported on several occasions to have damaged eucalyptus logs and, in each case, it was shown that the bark had not been removed at the time of felling.

Unidentified bagworm caterpillars (Psychidae) damaged ornamental flamboyant trees (*Poinciana regia*) growing in Umtali streets. Nearby *Jacaranda* and *Spathodea* were not attacked. Attempts to rear adult specimens failed. The cotton stainer, *Dysdercus intermedius*, Dist., and *D. nigrofasciatus*, Stal., were reported in large numbers on ornamental Australian Flame Trees (*Sterculia acerifolia*) in the Mazoe District.

**Miscellaneous Crop and Garden Plants.**—A severe localised outbreak of a new species of mint flea-beetle, *Longitarsus menthobius*, Bryant, occurred in a crop of experimental mint (*Mentha piperita*) on a farm in the Mazoe District in November. It was at first feared to be a recent importation, but the discovery of typically damaged wild mint (*M. longifolia*) in other areas allayed these fears somewhat.

Some gladiolus and ifafa lily corms were severely infested in the field by the mite, *Rhizoglyphus echinopus*, F. & R., but the infestation appeared to be secondary to physical injury in all three cases.

*Dorylus* ants were reported from four centres damaging or destroying artificially watered annuals by attacking the root sur-

faces. Carrots suffered the most severely but cabbages, lupin and petunia were also badly affected. The liquid application of benzene hexachloride, which was allowed to soak into the soil, kept the ants away from such plants as petunias but could not be advised for carrots owing to the danger of tainting. Incidentally and more typically, it may be added that these normally carnivorous ants killed about a dozen especially valuable turkey chicks reared from imported eggs.

Tea plantations on the Eastern Border suffered heavily from the attacks of termites on the living plants. *Odontotermes transvaalensis*, Sjost., or a near relation, is inculpated. Cultivation has unfortunately eliminated surface signs of nest sites. The only successful method so far adopted against these pests is the application of a layer of veld grass to serve as a counter-attractant was well as a mulch.

Several grasshoppers (Orthoptera) have been reported as doing damage, not always severe, to various cultivated plants, especially tobacco. The most frequently occurring of these have been *Catantops melanostictus*, Sch., and *Zonocerus elegans*, Thb. Two other species which commonly occur semi-gregariously, *Phymateus viridipes*, St., and *Maphyteus baccatus*, St., have not been reported during the year.

**Stored Products, Timber, etc.**—The practice of storing maize in tobacco storerooms led to several complaints of the presence of the Maize Weevil, *Calandra oryzae*, L., and flour beetles, *Tribolium*, spp., in bales of tobacco arriving on the auction floors. The owner was communicated with in each case reported, and the position corrected. Infestation of stored maize by the Maize Weevil was heavier than usual and the added pressure from this source, combined with earlier opportunities for field infestation afforded by early ripening of the crop, brought about increased incidence of the weevil in the field at harvesting.

Apart from infesting held-over tobacco on several farm and warehouse premises, the Stored Tobacco Beetle, *Lasioderma serricorne*, F., damaged herbarium specimens in Salisbury, the families mainly attacked being Malvaceae, Capparidaceae, and Convolvulaceae in that order of severity.

The Curculionid, *Acallopistus fallax*, Boh., was reared from seeds of *Abutilon angulatum*.

Experimental consignments of angelica root were found on arrival overseas to be infested by the Indian Meal Moth, *Plodia interpunctella*, Hbn., which was able to infest the roots before they were packed.

Caterpillars of the Noctuid Moth, *Simplicia inflexalis*, Guen., attacked newly bulked air cured tobacco. Damage was negligible. The normal food of this species is believed to be dead or dying grass and weeds.

**Miscellaneous Insect Notes.**—In November, before the commencement of the rains, the tree, *Heeria reticulata* (Anacardiaceae) was the host of nymphs of the Cercopid bug, *Ptyelus grossus*, St., in a "rain-tree" combination. "Precipitation" was

copious, two-pints of water having been collected in a small basin overnight.

Beetles believed to be *Lagria villosa* were reported as being very numerous on angelica plants in August, though no noticeable damage was done.

*Piezodorus purus*, Stal., a shield bug, invaded a house in plague proportions in Gwelo.

Reports of piercing insects not normally seeking out man for their attentions included the Tabanid fly *Nuceria pallidipennis*, Ric., the assassin bug, *Pirates conspurcatus*, Dist., and a Nepid or Water Scorpion, *Ranatra*, sp., a specimen of each of which inflicted a painful bite on man.

A few examples of suspected button spiders, *Latrodectus indistinctus*, Lat., were sent in for identification. These proved to belong to the allied species *L. geometricus*, Koch., which is relatively harmless. The latter is more frequently found in habitations and possesses a characteristic crimson hour-glass shaped mark on the underside of the abdomen.

**Tsetse Fly Operations.**—Game reduction operations against *Glossina morsitans*, and clearing operations against this species, *G. brevipalpis* and *G. pallidipes* on our eastern border have continued satisfactorily.

The prolonged and intense dry season, following on indifferent rains, may have been responsible for a rather wider scattering of *G. morsitans* in certain areas towards the end of the dry season than is normally expected. On the other hand it remains to be seen whether a cyclical increase of tsetse such as has been suggested elsewhere has commenced.

A separate report on the Tsetse Fly position will be published.

**Administration.**—There was an increase in the number of packages and consignments of imported plants, fruit, etc., inspected at the ports of entry. Owing to the presence of pests or absence of required certificates, over 2,000 packages of fruit, tomatoes and potatoes were returned to the Union of South Africa. The importation of *Opuntia*, including spineless cactus, from the Union was prohibited to avoid importing introduced insect enemies of these plants. Severe restrictions were placed administratively on the importation of tomato fruits and seeds from that country on account of the reported presence there of Bacterial Canker of Tomato (*Corynebacterium michiganense*).

The number of nurseries registered remained unchanged at 30.

Tobacco removal licences issued for 1950 remained about the same at 2,460 and the number of inspections increased from 142 to 644. Five licences were temporarily suspended owing to the discovery of the Stored Tobacco Beetle, *Lasioderma serricorne*, F. Failure to destroy tobacco seed-bed plants was the commonest serious offence on the part of growers.

**The Insect Collection.** About 100 species were identified for the Branch by the Imperial Institute of Entomology and smaller numbers by organisations or individual workers in the Union.

**General.**—Recorded enquiries regarding pests increased by 34 per cent. to 441, and many more were unrecorded. Bee-keeping enquiries remained higher than formerly, and the formation of a Rhodesian Bee-keepers' Association, which had been quietly commended by the writer to interested parties of recent years, took place in July. Only one lecture was given. Seven signed articles were published. One international conference and 21 established board and committee meetings were attended.

The staff position remains difficult.

**Acknowledgments.**—I wish to acknowledge the helpful co-operation of the Customs Department in connection with Plant Import Regulations, the B.S.A. Police in connection with Tobacco Pest Prevention Regulations and miscellaneous help, the Native Affairs Department and the Veterinary Department in connection with Tsetse Fly Control Operations, the staff of the Mt. Silinda Mission Hospital for sympathetic treatment of native labourers injured in the maintenance of the anti-tsetse forest clearing on the eastern border, and the Salisbury Branch of the Southern Rhodesia Red Cross Society for assistance in keeping our lonely tsetse fly posts supplied with reading matter.

I also tender my grateful thanks to all members of my staff for their loyal service and the full and willing co-operation they have shown throughout the year.

M. C. MOSSOP,
Chief Entomologist.

# Summary of Annual Report of Chief Agricultural Economist for the Year ended 31st December, 1949

The most important factor bearing on the agricultural economy of the Colony in 1949 was Government action as a result of devaluation. A poor cropping season, resulting in heavy maize imports for the second time in three years, followed by a prolonged dry season involving severe cattle losses and accentuating the seasonal shortages of meat, milk and butter, had strengthened the body of opinion in favour of self-sufficiency in basic foods. Devaluation meant a considerable increase in cost of any food imports from dollar sources and in the face of the growing burden of the cost of subsidies the Government took immediate steps towards greater freedom in the national economy, removing the heavy maize subsidy and partially relinquishing price control.

The Government move towards relaxation of control brought major problems into immediate focus. In the first place it had to be recognised that freedom from control in agriculture would be inconsistent with a policy of self-sufficiency in basic foods. Soundly based expansion in food production must rest on stabilised prices and it is only by controls that prices can be stabilised and expansion fostered in those directions and at the rate most advantageous to both the agricultural and national economy. Again, with the removal of the maize subsidy it became clear that any indiscriminate scramble towards self-sufficiency without due regard to cost may place a rigid restriction on the future of the agricultural industry. This aspect has been stressed by the factors responsible for the collapse of the egg market. Paying the full price for maize, our egg producers are now unable to dispose of eggs by export on an economic basis, and so long as the present ratio of costs to world prices remains the market for eggs will be largely restricted to internal sales. Thus self sufficiency in grains, if achieved at high cost without due regard to efficiency, might serve to restrict our entry into export markets with livestock products when the export stage is reached.

The achievement of a large degree of self-sufficiency in basic foods without costly distortion of the agricultural economy requires not merely retention of control of prices of these commodities, together with control of import and export, it requires also that choice must be made in respect of incentives to expansion and the repercussions of high rates of incentive must be recognised. In addition, the closest co-ordination of controlled prices should be attained. If co-ordination and direction are to be soundly based a systematic body of information in respect of producton resources and costs needs building up without delay. The proposed agro-economic and land utilisation survey would provide much of the essential background information and preparatory work has been

carried out by this branch with a view to commencing that survey in 1950.

Commodity costings, which provide indispensable data for the sound operation of price controls, were expanded during 1949. Maize costs were collected in respect of 34 lands, totalling 4,854 acres. Milk production costs and pig costs were continued with a view to appreciable expansion in 1950.

A survey of the economics of small scale irrigation was carried out in conjunction with the Irrigation Department and the Conservation and Extension Branch and the results will shortly be available for issue. The enquiry into farm labour utilisation and mechanisation was begun towards the end of the year and will be completed in 1950.

Throughout the year the Branch has provided a mass of information on the economics of production and marketing. Material was made available for the Engledow Report and much work was undertaken for the preparation of the annual Food and Agriculture Organisation report. The Registrar of Co-operative Companies has investigated the affairs of nearly all the registered companies and much necessary guidance has been given. The Chief Agricultural Economist has served as Chairman of the Maize Control Board, the Dairy Industry Control Board, and the Pig Industry Board, as a member of the Cotton Research and Industry Board, the Milk Marketing Committee and the Tariff Advisory Committee, as an adviser to the Agricultural Prices Advisory Board and as a member of several other departmental and inter-departmental committees and special working parties.

S. M. MAKINGS,
Chief Agricultural Economist.

# Summary of Annual Report of the Chief Dairy Officer for the Year ended 31st December, 1949

**Dairying Season.**—The dairying season 1948/49 was characterised by a rainfall which was well below normal. The season opened promisingly enough with good general rains in October and November, but these were unfortunately followed by a prolonged dry spell which lasted until the middle of January, by which time the food crop position in most areas had become really serious. The timely reappearance of the rains at this stage improved matters to some extent, but after the middle of February the rainfall became very patchy and finally tailed off disappointingly before the end of March. In general therefore the season was unfavourable for crop production and this is reflected in the yields of the staple grain and fodder crops which were well below average.

**Production of Dairy Produce.**—Despite an unfavourable season dairy production was fairly well maintained and, although figures are not yet available to show the aggregate milk production for the Colony, it is estimated that this reached approximately the same total as the previous year, which was itself a record.

The following figures show the production of milk, cheese and factory butter during 1949, as compared with production during the previous ten calendar years. It will be seen that cheese manufactures were about the same as those of the previous year, whilst factory butter on the other hand showed a fall of close on 20 per cent. This, however, was compensated for by an appreciable rise in the output of liquid milk which, it is estimated, reached the record figure of 5,000,000 gallons. Judging from the figures which reveal a steady expansion production, there is little doubt that had the season been more favourable, the total output of milk would have been well over nine million gallons. The occurrence of contagious sterility in many herds supplying fresh milk was an additional and important factor in the reduction of supplies.

DAIRY PRODUCTION, 1939-49.

| Year | Butter (Factory Butter only) | Cheese | Liquid Milk | Total Milk Production |
|---|---|---|---|---|
| | 1,000 lbs. | 1,000 lbs. | 1,000 galls. | 1,000 galls. |
| 1939 | 1,098 | 351 | 1,400 | 6,040 |
| 1940 | 1,373 | 370 | 1,640 | 6,910 |
| 1941 | 1,350 | 359 | 2,020 | 7,190 |
| 1942 | 1,149 | 495 | 2,522 | 7,042 |
| 1943 | 1,315 | 543 | 3,038 | 7,871 |
| 1944 | 1,244 | 534 | 3,227 | 7,570 |
| 1945 | 1,174 | 600 | 3,185 | 7,750 |
| 1946 | 1,055 | 592 | 2,964 | 7,200 |
| 1947 | 1,107 | 368 | 3,518 | 7,500 |
| 1948 | 1,423 | 542 | 4,550 | 8,700 |
| 1949 | 1,154 | 543 | 5,100 (a) | 8,600 (a) |

(a) = Estimated.

**Creameries, Butter Production and Consumption.**—The rationing of butter continued throughout the year on the basis of 4-ozs. per person per week, except for a period of 4½ months during which the ration was raised to ½-lb. This was made possible by large scale importations of butter from Australia and Kenya. The following figures show the relation between consumption and production:—

FACTORY BUTTER.

| Year | Consumption 1,000-lb. | Production 1,000-lb. | Shortfall 1,000-lb. |
|---|---|---|---|
| 1943/44 | 1,609 | 1,248 | 361 |
| 1944/45 | 1,300 | 1,237 | 62 |
| 1945/46 | 1,613 | 1,081 | 532 |
| 1946/47 | 1,671 | 1,010 | 661 |
| 1947/48 | 1,937 | 1,355 | 582 |
| 1948/49 | 2,056 | 1,281 | 775 |

It is apparent from these figures that the industry is not producing sufficient butter to meet the expanding requirements of the Colony, even on the present comparatively low basis of consumption which, assuming a European population of 120,000, amounted last year to approximately 17-lb. per head. Owing to the increasingly heavy calls on the industry for liquid milk, the prospects of making up the present shortfall between the consumption and production of butter appear somewhat remote, and the view has been expressed that consideration might well be given to the possibilities of utilising the Colony's available butter-fat for the manufacture of a high grade butter substitute in

sufficient quantity to obviate importation and rationing. In fact this was one of the recommendations of the Parliamentary Select Committee which investigated the dairy industry during the period under review, and it is proposed to explore the possibilities of the suggested project as soon as facilities are available locally for the manufacture of the high grade substitute. Exports of butter during the year, chiefly to Portuguese East Africa, amounted to 80,182-lb., as compared with 46,618-lb. the previous season.

Imports amounted to 1,004,660-lb., compared with 537,216-lb. last year. The Price Equalisation Scheme operated by the Dairy Industry Control Board continued to function during the year and was responsible for the maintenance of the same basic prices for butterfat as the previous year, viz., 2s. 3½d. per lb. and 3s. 1½d. per lb. for First Grade summer and winter butterfat respectively; as from July onwards, however, these prices were raised by means of a Government subsidy to 2s. 5d. per lb. for summer butterfat and 3s. 4d. per lb. for winter butterfat in accordance with a recommendation of the Select Committee previously mentioned. Wholesale and retail prices for butter remained unchanged throughout the season at 2s. 8½d. and 3s. per lb. respectively for first grade butter. The first month of the new season, however, following on devaluation saw the discontinuance of the Government subsidy and its replacement by increases in the wholesale and retail prices for butter which were advanced respectively to 3s. 2d. and 3s. 6d. per lb. for first grade, whilst summer and winter prices for butterfat were simultaneously raised to 2s. 9d. and 3s. 7d. per lb.

Manufactures of first grade butter were below last year's figures.

**Cheese Factories.**—There was no change in the number of registered cheese factories in the Colony which still stands at six, of which five are co-operative. As previously mentioned, production of cheese was about the same as that of the previous year.

Exports to all markets were 52,872-lb., compared with 65,882-lb. the preceding year, whilst imports—mainly from New Zealand and Australia—were appreciably higher, amounting to 251,670-lb. against 158,575-lb. in 1948. Local consumption reached the figure of 769,971-lb. as compared with 554,628 lb. the previous year, and would no doubt have been higher had supplies been obtainable.

The season opened with the wholesale and retail prices of cheese fixed respectively at 1s. 10d. and 2s. 2d. per lb. On the 1st January these were raised by 2d. to 2s. and 2s. 4d. per lb., and were advanced again by a further 2d. per lb. on 1st July on the recommendation of the Select Committee.

A further increase of 3d. per lb. occurred on the 21st October following on devaluation, so that the closing prices at the end of the calendar year were 2s. 5d. per lb. wholesale and 2s. 9d. per lb. retail.

**Milk and Cream Supplies.**—As mentioned elsewhere the volume of milk entering the fresh milk trade exceeded that of the previous year by approximately half a million gallons and represented close

on a four hundred per cent. increase over the liquid milk output in 1939.

Despite an expanding output, however, there was little surplus for fresh cream or for ice-cream manufacture; in fact in some of the larger towns there was a definite shortage of milk towards the end of the season.

The season opened with milk prices fixed at 4d., 4½d. and 4¾d. per pint respectively for cash, coupon and credit sales, and 2s. 6d. per gallon for bulk sales. These prices were maintained up to the end of March when the non-statutory milk marketing scheme, which had been operating up to that date, was abandoned, the subsidy paid thereunder discontinued and replaced by an all-round increase in consumer prices of 4d. per gallon.

Following, however, on the recommendations of the Select Committee on the Dairy Industry, the non-statutory milk marketing scheme was reintroduced on the 1st July with a new price structure whereunder producers were guaranteed an average price of 2s. 3d. per gallon (2s. 1d. in the summer and 2s. 5d. in the winter) for all milk supplied for the fresh milk trade in those areas where consumer prices had been fixed by statute. In practice the Milk Marketing Committee purchased the milk direct from the producer and re-sold it at a lower figure to the distributor, the difference being met by means of a subsidy. The guaranteed average price of 2s. 3d. per gallon applied to milk of a certain standard of compositional and hygienic quality, penalties being imposed or premiums added for milk falling below or above the standard. All sampling and testing of milk for this purpose was undertaken by the Dairy Officers of this Branch. There is no doubt that the payment of this guaranteed price for milk was of great assistance in maintaining supplies and that without this inducement the shortage of milk would have assumed more serious proportions and probably necessitated some form of rationing.

Closing prices for milk at the end of the season were thus as follows:—

| | s. | d. |
|---|---|---|
| *Producer Price*: per gallon for standard quality milk | 2 | 3 |
| (2s. 1d., Summer). | | |
| (2s. 5d., Winter). | | |
| (Maximum premium payable: 4d. per gallon). | | |

| | s. | d. |
|---|---|---|
| *Retail Prices*: per pint (cash and carry) | 0 | 4½ |
| per pint (coupon) | 0 | 5 |
| per pint (credit) | 0 | 5¼ |
| per gallon (bulk) | 2 | 10 |

**Milk Recording.** Milk recording continues to make progress, but due to the occurrence of contagious sterility in many herds

under test, the number of cows and herds recorded did not reach the anticipated total of 10,000. The figures are as follows:—

HERD AVERAGES, 1948/49.

| Year | No. of Herds | No. of Cows Tested | Completed Lactations | Average Milk Yield lbs. | Average Production of Butterfat lbs. | Percentage of Butterfat | Days |
|---|---|---|---|---|---|---|---|
| 1930 ..... | 35 | 1,397 | 479 | 369 | 138 | 3.75 | 224 |
| 1940 ..... | 49 | 3,070 | 1,472 | 509 | 191 | 3.70 | 281 |
| 1945 ..... | 130 | 7,000 | 3,532 | 605 | 221 | 3.66 | 278 |
| 1948 ..... | 180 | 9,025 | 4,699 | 581 | 217 | 3.73 | 278 |
| 1949 ..... | 185 | 9,382 | 5,173 | 589 | 217 | 3.70 | 277 |

**Dairy Bonus Scheme.**—The fifth year of the Dairy Bonus Scheme ended on 30th September, 1949. The number of producers participating in the scheme was:—

144 as against 156 the year before.

DAIRY BONUS SCHEME, 1948/49.

| Year | No. of Participants | No. of Failures | Gallons of Milk on which Bonus Paid | Percentage of Total Milk Made into Cheese | lbs. Butterfat on which Bonus Paid | Percentage of Total Butterfat |
|---|---|---|---|---|---|---|
| 1944/45..... ..... | 100 | 1 | 435,790 | 57.7 | 245,655 | 24 |
| 1945/46..... ..... | 123 | 3 | 434,172 | 57.3 | 261,900 | 29 |
| 1946/47..... ..... | 143 | 1 | 165,773 | 41.4 | 273,000 | 32 |
| 1947/48..... ..... | 156 | 9 | 209,478 | 54.0 | 290,000 | 26 |
| 1948/49..... ..... | 144 | 14 | 265,832 | 44.3 | 216,140 | 22.5 |

The decrease in the number of producers participating in the scheme as well as the decline, as compared with the figures of four years ago, in the quantities of milk and butterfat on which the bonus has been paid is due mainly to the general trend within the industry for the diversion of industrial milk, which is eligible for the bonus, to liquid milk on which no bonus is payable.

J. CORRY,
Chief Dairy Officer.

# Summary of Annual Report of Chief Poultry Officer for the Year ended 31st December, 1949

**General Position.**—The industry has passed through a very difficult year, for the following reasons:—

1. Good prices in 1947 and 1948 encouraged abnormal expansion, with the result eggs stored late in 1948 carried over to 1949 could not be sold locally during the "scarce" season. Eggs were therefore the first food product to achieve a surplus in the post-war period.

2. Lower prices overseas and increased costs of feeding made it unprofitable to export eggs overseas.

3. High prices and some poor quality eggs resulted in lowered consumption.

4. When control was removed the price could not be maintained in the face of the surplus and prices dropped below cost of production, resulting in serious loss to producers.

5. Removal of the maize subsidy and devaluation further increased costs and added to the loss on poultry products.

6. The Rhodesia Poultry Products Co-op. became the dumping ground for the surplus and has therefore become seriously financially embarrassed.

The outlook at the end of the year is that contraction is taking place rapidly, but it is hoped some scheme to prevent excessive contraction, which will only result in shortages in 1950, will be arranged.

**Poultry Feeds.** Grain feeds have been available and no serious shortages have occurred. Protein feeds of both animal and vegetable origin have been in short supply and imports at higher prices have been essential.

Grain prices have risen considerably.

By-products and offal feeds are considered to be too high in price for this class of feed.

**Egg Prices.** The Maximum Egg Prices Order with the same prices as for 1948 remained in force until October 28th, when eggs were de-controlled. Since that date egg prices have fallen well below the equivalent 1948 figures at the end of the year.

Agitation from consumers against the quality and size of some eggs offered for sale led to a comprehensive scheme for regulating the grading of eggs being drawn up and submitted by this Department, but it was not accepted by Government. It is necessary, however, to have some standard to which all would adhere.

**Table Poultry.**—Farmers have enjoyed good prices for table poultry throughout the year and the price remained steady until overseas prices dropped 2d. per lb. for export birds. This has affected a certain class of young bird, but not the main local market to any extent.

**Poultry Statistics.**—

SUMMARY OF ANNUAL REPORT.

Imports of live poultry amounted to 11,464, valued at £1,905: of frozen poultry 23,188 lbs., valued at £1,941: of fresh eggs 1,335 dozen, valued at £359.

Exports of live poultry were 187,943, valued at £14,280; of frozen poultry 259,174 lbs., valued at £30,273; and of fresh eggs 115,788 dozen, valued at £18,452.

**Live Poultry and Eggs.**—The figures for 1949 will not be available until later, but the figures for 1948 which have not previously been reported are presented, together with 1947 figures. It will be noted there is a considerable increase in hens and pullets, which would account for the increased production of eggs in 1949 which has been experienced.

POULTRY.

| Year | Cocks | C'kerels | Hens | Pullets | Ducks | Geese | Turkeys | Total |
|---|---|---|---|---|---|---|---|---|
| 1947 | 13,552 | 41,327 | 198,324 | 131,623 | 19,175 | 1,255 | 13,301 | 418,557 |
| 1948 | 18,238 | 58,148 | 231,175 | 163,214 | 21,154 | 1,443 | 16,794 | 510,346 |

EGGS (Dozens).

| Year | Production | Value | Consumption |
|---|---|---|---|
| 1947 ..... ..... ..... | 1,420,430 ..... | £150,882 ..... | 1,314,051 |
| 1948 ..... ..... ..... | 1,764,250 ..... | £206,398 ..... | 1,646,668 |

The Consumption figure is the production less exports.

These figures are obtained from licensed farmers and others known to the Department only, and do not represent the accurate totals for the Colony.

**Poultry Station.**—The Poultry Station was maintained on the same level as in past years.

The breeding of pedigree birds of four breeds by progeny test methods continued. Stud cockerels were sold to the public to the value of £85, and egg sales to the General Hospital to the value of £1,240.

Importation of hatching eggs from the United States of America by air was tried with limited success, but a few individuals of high quality have been reared.

A project to test the value of "Stilboestrol" for "hormone" treatment of cockerels was in progress at the end of the year.

The 29th Annual Egg Laying Test terminated on January 30th, results of which have been published and which were quite satisfactory. The 30th Egg Laying Test commenced on March 1st with a full complement of birds from Rhodesia and the Union.

It has been decided to shift the Station to the Gwebi Agricultural School farm by degrees as buildings are completed.

**Shows.**—Poultry Shows were conducted by the local Poultry Clubs at the Agricultural Shows in Salisbury, Bulawayo, Bindura, Umtali and Gwelo, and were well supported. A departmental exhibit was staged at Salisbury.

**Extension Services.**—This important work was curtailed by shortage of staff and transport, but whenever possible visits were paid to farmers and Farmers' Associations requiring these services. Close contact was maintained with the Rhodesia National Farmers' Union through the National Poultry Committee of that organisation.

**Disease.**—For the first time Bacilliary White Diarrhoea was diagnosed on a farm near Salisbury. Sales of stock were stopped by the Veterinary Department and regular tests have eliminated all carriers in this flock. It is proposed to have pilot tests in various parts of the country and later commence 100 per cent. testing of all breeding stock on farms offering stock for sale.

No other serious outbreak of disease was recorded.

I wish to acknowledge the efficient services of the Manager, Government Poultry Station, Salisbury.

G. H. COOPER,
Chief Poultry Officer.

# Summary of Annual Report of the Chief Chemist for the Year ended 31st December, 1949

**General.** -The routine analytical and advisory work of the Branch has again expanded very considerably during the year.

Two members of the Staff have devoted their whole time to a survey of the irrigable soils of the Land Settlement farms at Umshandige. This survey is not yet complete. A preliminary reconnaissance of the Popotekwe Irrigation Scheme was also carried out.

**Soil Surveys.**—During nine months spent in the field the two officers permanently engaged on Soil Survey completed 13 farms at Umshandige. By employing field methods for pH and water-soluble salts, it was found possible to classify the soils provisionally for irrigability without waiting for laboratory analyses. Five hundred and five pits in all were examined. Work on the preparation of reports is proceeding.

During the year a preliminary reconnaissance of the Popotekwe Irrigation Scheme was carried out. The area was surveyed and gridded by the Irrigation Department and pits were sunk as requested by this Branch.

A broad Soil reconnaissance of the Eastern Districts was carried out during the year. During this tour a long-term forestry experiment at Stapleford Forest was examined and sampled.

Two private irrigation schemes were examined.

**Drainage.**—In collaboration with the Conservation and Extension Branch, drainage experiments involving different types of drains have been laid down at Umshandige.

**Conferences.**—In October the Acting Chief Chemist attended the African Regional Conference and read a paper on soil surveys.

**Laboratory Analytical Work.**—The classification of samples analysed or investigated during the year 1949 is as follows:—

| | |
|---|---|
| Soil Survey Samples | 265 |
| Soils | 1,238 |
| Manures and Fertilisers | 37 |
| Farm Foods | 41 |
| Waters | 353 |
| Vegetable Products | 90 |
| Limes | 4 |
| Toxicological | 357 |
| Miscellaneous | 49 |
| Investigatory Work | 408 |
| Total | 2,842 |

These figures represent an increase of 33 per cent. over the previous year. Over 300 more soils have been submitted for analysis this year than last. Another feature is the fourfold increase in the number of farm foods submitted. The number of vegetable products of all kinds has almost doubled, and the number of samples in connection with investigatory work has also very greatly increased.

The Branch has, in addition, continued to supply the Veterinary Department with Standard Iodine Solution for dip-testing and this year prepared 238 litres.

**Soils** (1,238).—The demand noted last year for information on soils suitable for maize and general food crops has risen still further, 471 soil samples being submitted for maize alone. Samples totalling 225 were examined for plot holders and market gardeners. Samples submitted for tobacco (434) again showed a substantial rise.

As all samples are reported on individually it will be seen that advisory work takes up much of the time of the Staff.

**Fertilisers and Manures** (52). Seventeen samples were taken under the Fertiliser, Farm Foods, Seeds and Pest Remedies Act. All but one conformed to the registration, and this one, after remixing and resampling, fell within the prescribed limits.

**Farm Foods** (41).—The number of farm foods sent in by farmers shows a more scientific approach to the problems of feeding.

**Waters** (353).—Work proceeded under this heading for the Irrigation Department, and in addition, there was a marked increase in the number of private samples of irrigation water sent in for analysis.

**Vegetable Products** (90).—Among the vegetable products analysed were numerous samples of hydrid and other maize from the Agricultural Experiment Station. No fall in the protein content of hybrid maize was apparent.

**Toxicological** (357).—There was an actual increase of 45 specimens from dead animals, as compared with the previous year. It is obvious that the danger inherent in arsenical dips, referred to in our report for 1948, has not diminished. In addition, six cases of mercury poisoning were found, the probable source of the mercury being the organic mercurials used for seed treatment.

**Miscellaneous** (49).—Although there was a marked drop in unclassified samples, there was the usual variety, which included vermiculite for pH, and bark for tannin.

**Investigatory Work** (408).—The experiments at Grasslands Experiment Station, Marandellas, and at Matopos, described in last year's report, have been continued during 1949.

Investigatory work has been commenced on the water-holding capacity and wilting-point of vermiculite and vermiculite mixtures. The variable pH of vermiculite has been found to be relatively unimportant if soil is present because of the buffering effect of the soil.

Preparatory work has begun on fundamental research into the availability of phosphate in Rhodesian soils. The degree of fixation, the estimation of the relative degrees of fixation, and the availability of the phosphate to plants under different conditions are all under investigation.

In conjunction with the Chief Tobacco Officer, research has been started at Trelawney into the effects of potash, phosphate and boron on the quality of Virginia tobacco.

During the year, a conductivity apparatus was devised for use in the field.

B. S. ELLIS,
Acting Chief Chemist.

# Summary of Annual Report of the Chief Agriculturist for the Year ended 31st December, 1949

**Season and Crops.**—The season which opened early and with such great promise, turned out to be little better than the unparalleled drought of 1947.

In fact, for many farmers it proved the third year of drought in succession, and bad crops, including the season 1947/48 when 1,912,005 bags of maize were reaped in the Colony.

The season can best be described as yet another disappointing one during the last decade. Alternating with hope and despair, the fortunes of the various districts were diverse. The season was characterised by good early rains commencing at end of October, followed by periods of drought.

By mid-January the maize crop threatened to become desperate within a week, but fortunately general rains with some heavy precipitations soon became general. The last good general rains of the season fell from the 12th to the 15th March. On the whole Matabeleland did not fare too badly for veld hay—where full advantage could be taken of this fodder and silage crops—and water supplies.

Despite unfavourable climatic conditions, it is pleasing to be able to record that notwithstanding the final reduction in acreage —due to failures and bad stands—a total of 303,735 acres of maize yielded 1,388,297 bags, or 4.57 bags per acre, compared with 323,432 acres, yielding 1,912,005 bags, or 5.90 bags per acre in the previous favourable season.

The four districts, i.e., Hartley, Salisbury, Lomagundi and Mazoe together produced a total of 918,764 bags, or approximately 70 per cent. of the total European crop. Matabeleland produced 175,672 bags, or 3.2 bags per acre, from 55,510 acres reaped.

The season was also a disastrous one for wheat, as the summer drought severely affected water supplies. Most of the largest producers and many small growers with irrigation planted no wheat, and the moisture-retaining vleis dried up early.

A total of 540 moisture tests were carried out by the Plant and Grain Inspection Staff at the request of the Maize Control Board and farmers; and a number of samples were classified for the Board.

A good farming bonus of 2s. 4d. per bag was paid in respect of maize qualified under the terms of Government Notice No. 854 of 19th November, 1948. Of the 552 growers who registered for the bonus, 435 or 79 per cent. were assessed for the payment. No good farming bonus will be paid in respect of the 1949/50 maize crop. The guaranteed price for that crop has been fixed at 35s. per bag.

**Certified Seed Maize.**—Commercial double hybrid certified seed maize made its debut in 1949. The demand greatly exceeded the supply. The total of 1,774 bags of double hybrid seed was produced on 353 acres. About 2,500 acres of hybrid breeding plots have been sown in the 1949/50 season. If growers are successful and the average yield is six bags per acre, some 15,000 bags of double hybrid seed will be available for sowing in the 1950/51 season. If each bag sows only 16 acres, there will be enough seed to sow 240,000 acres of commercial maize.

**Hybrid Maize Breeding Programme.**—Maize, the most important food crop in the Colony, received primary consideration in plant breeding work. Many hundreds of in-bred strains were sown in individual plots for selection, further in-breeding and double hybrid combinations were made for purposes of trial, both on this Station and in other parts of the country. Over 250 pure-bred strains were planted in duplicate plots for further in-breeding on the Salisbury Experiment Station.

The bulking of in-breds, and the making of single hybrids is being undertaken at both the Henderson Research Station and the Gwebi Experiment Farm, attached to the Agricultural College, for the production of double commercial hybrid seed by members of the Southern Rhodesia Seed Maize Association. At the former Station 80 acres are planted for the production of single hybrids and four acres to in-bred bulks; and 70 and 4 acres respectively at the latter Station. Given a normal season, the resultant crop will provide more seed than is required to produce double hybrid seed for the Colony's total requirements and provide a reserve to draw on if and when required. During the season 1948/49, 1,227 lbs. of in bred, 75 bags of single hybrid and 605 bags of double hybrid seed was produced by the two Stations.

Rotation trials show the great benefit obtained by growing legumes for ploughing under as green manure. The effect of a green manure crop is short lived; the second crop of maize after green manure is only a little over half that of the crop directly following the green manure. There is some indication that the beneficial value of a good green manure crop approximates to a dressing of six tons of compost together with the rotational effect of a legume grown for hay. More exact information on this point will be obtained at a later date. Of those crops under trial for purposes of green manure, velvet beans gave better results than a late sown crop of sunn hemp.

**Legumes.**—The dry season was unfavourable for the growing of soya beans. In the trial in which a number of soya bean strains and the best ground nut varieties are compared for their yields of protein and oil, the ground nuts produces more protein and four times the quantity of oil.

The variety Mars provided the heaviest yield of seed of the four dwarf, early maturing varieties of sunflower under trial. It was followed by Pole Star, Southern Cross and Jupiter in that order. Mars, however, had a lower oil percentage than each of the other three varieties.

**Mechanisation of Maize Crop.**—The feasibility of completely mechanising the growing of the maize crop, including the picking of the ears, was investigated on a field of 65 acres on the Gwebi Experiment Farm. All the mechanical operations in the growing of the 65 acres are given below. The actual operating times were taken from the meter on the tractor:—

| | | |
|---|---|---|
| Ploughing Three-Furrow Disc | 109 | hours. |
| Fertilising | 43 | ,, |
| Pre-Cultivation with Disc Harrow | 16 | ,, |
| Planting Maize | 17 | ,, |
| Cultivation S/Tooth Harrow, Four Sections | 11 | ,, |
| Cultivation S/Tooth Harrow, Four Sections | 8 | ,, |
| Discing between 6-foot rows, single spacing | 20 | ,, |
| Discing between 6-foot rows, single spacing | 20 | ,, |
| Cultivating for Witchweed | 20 | ,, |
| Cultivating for Witchweed | 20 | ,, |
| Picking by Machine | 66 | ,, |
| | 350 | hours. |

The actual cost per hour of tractor working time can be assessed by the individual farmer using a similar tractor. In this test the strain of maize grown was a top-cross. The use of hybrid seed should reduce the picking time. The method employed for inter-row cultivation, including discing, proved successful and all weeds were coped with. The yield was 651 bags or 10 bags per acre.

The following summary of Revenue of Gwebi Farm from 1st January to 31st December, 1949, very clearly reflects the financial side of the farming operations:—

| | | | |
|---|---|---|---|
| Sales: Total Livestock Cattle, Dairy and Pigs Sales | £4,350 | 18 | 6 |
| Agricultural Crops— | | | |
| Sale of Seed, etc. | 499 | 2 | 9 |
| Sale of Maize, including Seed | 3,499 | 10 | 0 |
| | £8,349 | 11 | 3 |

**Matopos Research Station.**—200 acres of maize were planted. Owing to the drought 70 acres planted after the rains ceased, on the 2nd December, failed to produce a crop. The remaining 130 acres produced very good grain yields and excellent yields of maize silage were reaped. Approximately 800 tons of silage were made and 700 bags of grain were reaped.

Approximately 100 tons of velvet bean hay were made for stock. Cowpeas do not appear to be well suited to the heavy

soils on this Station. Hay making conditions were very good and hay of excellent quality was made. Approximately 1,000 tons of hay were made from 800 acres. It was more than adequate for all requirements.

**Farmers' Day.**—A very successful Farmers' Day was held on 23rd April. It is estimated that approximately 400 farmers attended, which brought the total number of visitors to the Station to 539 for the year.

There are now two crop experiment Stations on the Matopos Research Station: one is situated on the heavy soil area and the other on the granite sandveld area. It was possible only to open the Station on the heavy soil area in 1948/49.

Over 400 selfed selections of maize were made during the past season. Twenty-nine varieties of sorghums were under trial. Several varieties show very great promise and it is hoped that they will occupy a very important place in the economy of the Colony in the near future.

Fifty-six varieties of wheat were grown in small plots; twenty of these were new introductions from Kenya. Several show considerable promise. A new Punjab strain, obtained from India, which has replaced Punjab 8A in that country, shows very great promise in this Colony after one season's trial.

**Turkish Tobacco and Plant Breeding Station—Umgusa.**—In spite of the drought another very successful season was experienced on this Station, which serves to emphasise the great agricultural value of the Gusi sand areas of the Colony for crop production.

Five hybrid maize strains tested yielded significantly higher than Potchefstroom Pearl.

D. E. McLOUGHLIN,
Chief Agriculturist.

# Summary of Annual Report of the Chief Botanist and Plant Pathologist for the Year ended 31st December, 1949

**Movements.**—103 farms were visited in 13 districts. Frequent inspections were made of tobacco auction floors and grading sheds, and gardens were inspected for tomato spotted wilt virus (Kromnek) in dahlias in Salisbury and Bulawayo.

The Chief Botanist and Plant Pathologist attended the African Regional Scientific Conference in Johannesburg, as a member of the Central African delegation. The Senior Plant Pathologist attended the 23rd Annual Congress of South African Sugar Technologists at Durban and visited Canada and the United States of America to enquire into tobacco research on behalf of the Rhodesia Tobacco Association.

**Publications:** By J. C. F. Hopkins.—"A Revised Descriptive List of Plant Diseases and Fungi in Southern Rhodesia" (in the press); "Long Term Botanical Research" (African Regional Scientific Conference); "Annual Report, 1949," ("Rhodesia Agricultural Journal," July-August).

## PLANT PATHOLOGY.

**Laboratory.**—542 specimens were received, among which were 18 new records for Southern Rhodesia. They were:—

Root rot of sunn hemp due to *Thielaviopsis basicola*; charcoal rot of Irish potato due to *Macrophomina phaseoli*; cob rot of maize due to *Nigrospora oryzae*; whiptail of cauliflower due to molybdenum deficiency; grey mould of *Cardamine africana* due to *Physarum cinereum;* malformation of tobacco seedlings due to boron toxicity: vein thickening of tobacco due to unknown cause (has been reported from Mauritius and may be a form of leaf curl); stem rot of cassava due to *Botryodiplodia theobromae;* rust of *Rubus* (indigenous) due to *Hamaspora longissima*; anthracnose of avocado fruit due to *Glomerella cingulata;* leaf spots of violet due to *Ascochyta violae* and *Colletotrichum violae-rotundifoliae*; mildew of *Sclerocarya caffra* due to *Ovulariopsis* sp.; trunk rot of baobab due to *Ceratocystis* sp.: *Cicinnobolus cesati* on mildew of pumpkin; and the following fungi *Tricamphora pezizoidea*, *Stemonitis splendens*, *Ganoderma curtisii* and *Thelephora terrestris.*

Two new records are of particular importance, namely, *Thielaviopsis basicola* on sunn hemp and *Nigrospora oryzae* on maize. The former is the fungus causing black root rot of tobacco, which has not so far been reported from the Colony, and the latter, which caused severe damage to inbred maize cobs, has not before been of any consequence on established open pollinated varieties.

Charcoal rot of Irish potatoes is a single record and was found on a crop planted under hot, dry conditions.

The disease simulating severe leaf curl in tobacco was found on a single plant and there was no evidence of its spread.

A wilt of *Urena lobata* associated with *Fusarium* spp. was examined but the disease did not appear to be serious and was confined to a small patch.

A system of making permanent slides of important fungi has been started and the museum specimens have all been renovated. The library has been re-indexed on a numerical system.

## CROPS.

**Tobacco.**—On the whole the tobacco crop was unusually free from disease in the field, presumably due to the dryness of the season, but despite this there was a large amount of frog-eye (*Cercospora nicotianae*) barn-spotting in the leaf sent to the auction floors. This was particularly noticeable during the last months of the sales. Brown spot (*Alternaria longipes*) was not common.

Rosette was widely distributed in the late plantings and reports of heavy losses were received. Warnings about such a possibility had been issued during the earlier part of the season and some growers had taken the precaution of spraying their late plantings with a residual aphicide with good results.

Instances of almost complete recovery from rosette were observed very late in the season. Such occurrences are contrary to general experience of this disease and no explanation has so far been advanced.

Lightning injury was reported on many occasions and was the cause of reports of a new and dangerous disease. In one instance plants were killed in numerous patches distributed irregularly over a 15-acre field.

The new leaf spot caused by *Ascochyta* sp. was found on a few leaves at Karoe, but no outbreak of the disease was observed or reported.

*Pythium aphanidermatum* was again found causing a severe damping-off in seed beds and foot rot in transplants during a spell of hot, dry weather towards the end of the year.

Wildfire has been prevalent during the early part of the 1949/50 season in some districts.

Doubts have been thrown on the efficacy of seed treatment, but seed known to be infected by *Ps. tabaci* has been treated with silver nitrate in the laboratory, then crushed and kept in sterile nutrient broth for over a week without the development of any bacteria or fungi. Such seed germinated normally in germination tests.

**Maize.**—A foot rot of young maize plants occurred in several districts. Plants became chlorotic and some died; a brown rot was present at the base of each. This was reported to be affecting

hybrid and not open pollinated varieties and appeared during a period of hot, dry weather, which checked growth following rains. Investigations showed the rot to be caused by *Fusarium moniliforme* var. *subglutinans*, which killed the tap root before the adventitious roots had developed sufficiently to support the young plants. A few days after good rains had fallen, side roots were put out and the remaining young plants grew normally. Both hybrid and open pollinated varieties were affected.

**Sunn Hemp.**—Numerous reports of lodging of well grown crops were received. Specimens examined showed the presence of lesions near the bases of the stems of affected plants, which were associated with a species of *Colletotrichum* not yet identified and *Macrophomina phaseoli*. Investigations are proceeding.

**Ground nuts.**—*Cercospora* leaf spot was common but caused no serious injury.

Rosette was widespread and caused losses in Lomagundi. It was associated with poor stands of plants due, presumably, to drought.

**Forestry.**—Reports have been received of the deaths of well-established conifers in several parts of the Colony. A number of specimens were examined but no known pathogen was found. It is thought that the deaths were due to lowering of the subterranean water table following the past three seasons of subnormal rainfall.

**Fruit, Flowers and Vegetables.**—Peach mildew has increased in intensity and has caused considerable damage. Leaf curl caused defoliation of trees in some parts of the Eastern Districts.

Whiptail of cauliflowers (a new record) has been seen twice. Affected plants were treated with a solution of ammonium molybdate at the rate of 1 lb. per acre. After three weeks the young leaves of treated plants made normal growth whilst those of the controls remained typically distorted. No improvement in the development of the curd was observed, which could be accounted for by the advanced age of the plants when treated.

Typical symptoms of 2, 4-D injury were obesrved in young papaw, zinnia and *Callistephus chinensis* plants growing in pots 20 yards from empty tins which had contained a proprietary 2, 4-D herbicide.

**Cotton.**—A very severe leaf spotting due to *Alternaria gossypina* was received from Portuguese East Africa. Such severe form of the disease has not been recorded in Southern Rhodesia, but the identity of the fungus was confirmed.

## RESEARCH.

**Tobacco.**—A programme of disease research to be carried out at Trelawney and Karoe by the Plant Pathologist seconded for the purpose was drawn up in collaboration with the Tobacco Research Branch. It was largely a continuation in more detail

of the work done by the Plant Pathology Branch during the past four years, and results will be published in full by the Tobacco Research Station.

The principal lines followed were (1) further investigations of the effect of priming on the incidence of spot diseases and the quality and weight of the crop; (2) a detailed examination of the efficacy of a wide range of new fungicides using the single plant as a unit; (3) continuation of field spraying trials in a modified form; and (4) a study of species of Alternaria associated with tobacco and common solanaceous weeds.

The following is a summary of results from last year's trials:

(a) Priming reduced the amount of frog-eye field and barn spot and improved the quality of the leaf without reducing the yield, but gave no financial gain under conditions of low rainfall and sellers' market.

(b) Significant reduction in frog-eye barn spotting was obtained by field spraying, but the incidence of disease was so low owing to the dry season that the differences were small.

(c) The depressing effect of sprays on the amount of disease in adjoining unsprayed control plots was again noted and shown to be significant.

(d) Home-made Bordeaux mixture registered the highest efficiency of the fungicides tested.

Miss Hall, of the Tobacco Pest Control Research Scheme, collaborated in the investigation of fungicides by assessing the L.D.50 of each by the slide technique.

Field spraying trials by helicopter were carried out by Tobacco Pest Control Research Scheme officers and followed closely. The equipment used was found to be unsuitable for the application of fungicides to tobacco and it was concluded that more fundamental research was required to bring practical field work into line with promising theoretical possibilities.

**Sugar Cane.** Considerable attention was paid to smut disease (*Ustilago scitaminea*). Smut developed in the following newly introduced varieties when exposed to field infection: Co's 313, 453 and 464; N. Co's 79, 151, 291, 292, 313, 323, 330, 349, 351; M. 270. Of these, Co's 453 and 464 have developed the greatest number of smut whips.

Field observations suggest that smut is disseminated by both wind and water, particularly the latter. An isolated plot containing a duplicate set of newly introduced varieties has remained free from smut for more than 12 months.

The incidence of smut throughout the Triangle plantings has substantially declined since the large scale eradication of the highly susceptible Co. 301. No marked increase of the disease has been noted amongst the Co. 281 and 290 plantings. In these varieties control measures are now confined to the removal of smut whips only.

**Fruit.**—The spraying experiments for the control of apple diseases at Rhodes Estate, Inyanga, were continued in more detail. Better control of mildew than in the past was obtained with lime-sulphur.

Borax added to the soil increased the total crop of O'Hinemuri apples by approximately three times, but did not reduce the proportion of cracked fruit. Response to zinc sprays was also obtained.

**Forestry.**—Root material and cultures of mycorrhizal fungi of *Pinus radiata* were obtained from Tasmania and New Zealand. Seedlings were infected and sent to Stapleford Forest Reserve for comparison with plants inoculated with the local mycorrhizal fungus in their resistance to *Diplodia pinea*. A radiomised block experiment has been laid out by the District Forest Officer..

## SEED TESTING.

In the early part of the year the survey of agricultural seeds being sold in Rhodesia was continued with generally satisfactory results.

The resignation of the Assistant Seed Analyst in June reduced the staff to a learner assistant and seriously upset the work of the laboratory. The tests for the Southern Rhodesia Seed Maize Association could only be accomplished with the assistance of the Plant Pathology staff.

Germination tests on samples of seed issued by the Government Dehydration Factory to farmers were carried out.

## BOTANY.

**Herbarium**—Accessions.—4,130 specimens were added to the Herbarium. These included two species new to science, namely, *Clerodendron wildii* Moldenke and *Mesanthemum africanum* Moldenke. A further 371 were named for the Department of Native Agriculture and returned to the Director.

Individual collections of special interest were received from Mr. N. C. Chase; the Senior Pasture Research Officers, Matopos and Grasslands Experimental Stations; Drs. Fisher and Schweikerdt, of Natal University; and the Department of Native Agriculture. About 30 per cent. of the work of the Herbarium has consisted of determinations for Government Departments.

**Dictionary of Native Names.**—The bulk of the manuscript of a dictionary of native and common plant names is now completed and an official of the Native Affairs Department is at present checking the orthography. The book has been written mainly for use by field officers and farmers.

**Special Studies.**—Dr. Moldenke, of New York Botanic Gardens Herbarium, has named the entire collection of Eriocaulaceae and all duplicate material of Verbenaceae, of which families he is an authority.

Professor Karl von Suessenguth, of Munich, is studying our Amaranthaceae and has named all available duplicate material. In collaboration with Professor Merxmuller he is also elaborating the collection of Marandellas plants made by Mrs. Dehn, and it is hoped to publish this small regional flora in a Rhodesian journal in the near future. It will contain descriptions of a number of new species.

Studies are also proceeding on the genera *Otiophora*, *Bulbostylis*, and *Fimbrystylis*, with the assistance of Mr. Verdcourt, of Kew, and Miss Huntley, of Natal University.

**Royal Botanic Gardens, Kew.**—Great assistance has been given by the Director and Staff in the authoritative naming and checking of a very large number of plants, mostly collected during past reconnaissance surveys. With this assistance it will be possible in the near future to publish a number of surveys already made.

**Other Exchanges.**—Among other exchanges, valuable collections have been received from the National Herbarium, Pretoria, and arrangements have been made with the New York Botanic Gardens Herbarium for a set of the Vernay Nyasaland Expedition, 1946, material to be sent to us.

**Surveys.**—(1) A short survey of Triangle Sugar Estate in connection with extension of cane planting.

(2) A short survey of the Chimanimani Mountains in company with Mr. R. C. Munch, of Rusape, to whom thanks are due for organising camping arrangements. This was mainly a reconnaissance to prepare for a larger expedition in 1950.

(3) Umshandige Settlement Area, where a large collection of plants was made and many of the more common species named in the field for local departmental officers.

(4) A more thorough survey of the flora of the Victoria Falls Reserve at the invitation of the National Commission for the Preservation of Historical Monuments and Relics. An illustrated article and check list of all plants recorded from the Falls has been written and will be included in the scientific guide to the area which is being prepared by the Commission.

**National Botanic Gardens.**—The south western section has been selectively stumped to remove diseased and disfigured trees and bush, and the rocky outcrops cleared of undergrowth preparatory to planting aloes. Owing to financial stringency no other constructional development has been possible.

The whole area has been re-surveyed and fenced.

## ECONOMIC BOTANY.

A good number of poisonous plants have been reported on including *Dichapetalum cymosum* (Hook.) Engl. causing deaths of cattle near Bulawayo and Que Que; *Cassia occidentalis* L., suspected of poisoning a dog; *Capparis tomentosa* Lam., causing

death and sickness of natives who drank infusions of the roots; *Urginea altissima* Bak. bulbs, used for malicious poisoning of cattle; and *Sphenostylis erecta* Hutch., said to be used as a fish poison.

The following medicinal plants were recorded:—

*Cycnium adonense* E. Mey., as a snake bite cure; *Pentsia schistostephioides* M. R. F. Taylor, in treatment of duodenal ulcers; *Onicus benedictus* L., and *Euphorbia monteiroi* Hook., f., as emetics.

*Abutilon angulatum* Mast. was reported as a fibre plant.

A large number of enquiries concerned weeds and advice was given on the use of selective weed killers.

*Richardia braziliensis* (Moq.) Gomed, which is often troublesome in arable lands, was reported from Umtali to be much relished as a food by cattle and poultry.

The Botanist has written the descriptions for a handbook on poisonous plants of the Marandellas district to be published shortly by the Marandellas Farmers' Association. It is being sponsored by Mr. W. F. Collins and will contain a number of coloured plates prepared by Mrs. Dehn. It has been written in popular style for use by farmers.

**Noxious Weeds.**—New outbreaks of water hyacinth were found in the Makabuzi and Hunyani Rivers, which necessitated the engagement of additional labour to bring it under control. Systematic spraying with 2,4-D preparations has reduced the infestation in the Makabuzi River to the smallest since eradication work began. No spray material yet tested has given a complete kill with one application, and it was found necessary to do spot spraying later on small plants which survived. Re-infestation by seedlings still continues, but the general position has improved.

## GENERAL.

**Lectures and Meetings.**—The Chief Botanist and Plant Pathologist addressed the Rotary Club and the National Affairs Association on the subject of botanic gardens. The Botanist delivered a lecture on "Problems of Plant Distribution" to a joint meeting of the Rhodesia Scientific Association and the Botanical Society of Rhodesia. The Chief Botanist and Plant Pathologist attended Farmers' Day at Karoe.

**Agricultural Shows.**—The Chief Botanist and Plant Pathologist judged at the Salisbury and Umtali Agricultural Shows, and the Senior Plant Pathologist at the former. The usual departmental exhibit was staged.

**Visitors.**—Among visitors to the laboratories were Dr. G. A. C. Herklots, of the Colonial Office, Dr. Watts Padwick, formerly Imperial Mycologist in India, Mr. G. B. Symes, of the Colonial Insecticide Committee, Mr. D. F. Retief, Tobacco Research Officer,

Rustenburg, and Mr. H. M. Usher, General Manager, Sena Sugar Estates, whilst Herbarium facilities were afforded to Mr. J. Gomez Pedro, of the Centro de Investigacao Cientifica Algodocira, Lourenco Marques, Fr. J. Gerstner, Mr. F. C. Greatrex, and Mr. K. Palgrave.

The Chief Botanist and Plant Pathologist continued to serve on the Tobacco Research Board, Plant Regulatory Board, Divisional Co-ordinating Committee and *ex-officio* on the Seed Maize Association Executive. The Senior Plant Pathologist attended meetings of the Sugar Industry Board and acted as alternate for the Chief Botanist and Plant Pathologist.

Acknowledgement is made of valuable assistance given by the Directors and Staffs of the Royal Botanic Gardens and Commonwealth Mycological Institute, Kew, the British Museum (N.H.), Departments of Agriculture, Pretoria and Lourenco Marques, Lunds Museum, New York Botanic Gardens Herbarium, and the Botanische Staatsammberg, Munich.

Thanks are also due to the Departments of Forestry of Tasmania and New Zealand for the supply of material and cultures of mycorrhizal fungi of *Pinus radiata*.

J. C. F. HOPKINS,
Chief Botanist and Plant Pathologist.

# Southern Rhodesia Veterinary Report

APRIL, 1950.

**General.**—Rainfall varied greatly throughout the Colony. Grazing remained good, but the water position will increase in gravity as the year advances. Cattle were reported to be in good condition, but movements for drought reasons were necessary within the Fort Victoria and Bulawayo areas and from the latter to the former.

**Tick Life.**—A decline in tick life is reported from most districts The following quarantine notices were issued during the month: Salisbury 7, Bulawayo 3, Gwelo 3, Fort Victoria 6.

**Scheduled Diseases.**—

1. African Coast Fever: Nil.
2. Theileriosis: With the exception of Melsetter District, where one death occurred, mortality has ceased in all districts infected.
3. Anthrax: Inoculation was completed in the Belingwe Reserve, Bulawayo District.
4. Foot and Mouth Disease: Nil.
5. Glanders or Farcy: Nil.
6. Heartwater: Ten cases of a mild strain were confirmed in imported sheep in the Bulawayo District. Inoculation is receiving attention.
7. Lungsickness (Contagious Pleuro Pneumonia of Cattle): Nil.
8. Mange in Horses, Mules, Donkeys and Camels: Occasional cases of Head Mange were reported in the Salisbury District.
9. Pyaemia or Epizootic Lymphangitis: Nil.
10. Redwater: Cases were reported in the following Districts: Salisbury, Bulawayo 10, Umtali 3, Gwelo 1, Melsetter 3.
11. Rinderpest: Nil.

12. Swine Erysipelas: Nil.

13. Swine Fever: Nil.

14. Quarter Evil: Cases were reported in all Districts with the exception of Melsetter District.

15. Tuberculosis: Twenty cases in cattle from Messrs. Liebigs Ranch were diagnosed at West Nicholson, Bulawayo District.

16. Scab: Three cases were reported in the Bulawayo District.

17. Rabies: Nil.

18. Senkodo Disease: Occurred in the Bulawayo District.

19. Trypanosomiasis: As a result of inoculation the heavy mortality in the Mkoto Reserve, Salisbury District, was considerably reduced. One case occurred in the Melsetter District and ten cases in the Chipinga District.

20. Contagious Epididymitis and Vaginitis (Epi-Vag): One fresh focus of infection was found in Gwelo and one in Bulawayo. No farms, other than one in Fort Victoria quarantined for in contact reasons, were released. Improvement in infected herds was recorded in Fort Victoria and inspections were maintained throughout.

21. Lumpy Skin Disease: Mild cases were reported in the Salisbury, Bulawayo and Gwelo Districts.

22. Contagious Abortion: Confirmed in the Salisbury, Bulawayo and Umtali Districts.

**Scheduled Poultry Diseases.—**

23. Spirochactosis: Nil.

24. Coccidiosis: Nil.

25. Fowl Typhoid: Confirmed in the Salisbury, Umtali and Gwelo Districts.

26. Bacillary White Diarrhoea: Confirmed in the Bulawayo and Umtali Districts.

27. Tuberculosis: Nil.

28. Chicken Pox and Roup: Infection diagnosed in the Salisbury and Bulawayo Districts.

**Other Diseases.—**

29. Gallsickness: Cases were reported in all Districts.

30. Paratyphoid: Nil.

31. Geilsiekte: Three cases were reported in the Bulawayo District.

32. Horse Sickness: The following cases were reported: Salisbury 2, Bulawayo 6, Fort Victoria 2.

33. Biliary: One case occurred in the Salisbury District and one case in the Bulawayo District.

34. Sweating Sickness: Continued in the Bulawayo, Gwelo and Fort Victoria Districts. An acute outbreak in the Umtali District responded to treatment.

35. Opthalmia: Prevalent in all Districts.

36. Screw Worm: Prevalent in all Districts.

37. Coccidiosis: Nil.

38. Internal Parasitis: Still apparent in the Melsetter District.

39. Stiff Sickness: Reported in the Umtali District without mortality.

40. Calf Diphtheria: An outbreak occurred at the Rhodes Matopo Estate, Bulawayo District, where nine deaths were reported.

41. Marete Disease (Sheath Obstruction): Noticed in the Fort Victoria District.

**Poisoning.—**

42. Veld Poisoning: Cases occurred in the Umtali, Gwelo and Melsetter Districts.

43. Mineral Poisoning: The following deaths from Arsenical Poisoning were reported: Salisbury 11, Bulawayo 4, Umtali 14, Gwelo 3, Melsetter 3.
Five cases in the Umtali District and two deaths in the Gwelo Districts were also reported, the cause of poisoning being unknown.

**Mallein Testing.**—82 horses and 68 donkeys tested with negative results.

**Tuberculin Testing.**—23 bulls, 4 cows and 31 heifers tested with no positive reactors to the test.

**IMPORTATION:**

**Union of South Africa.**—50 cows and calves breeding, 47 bulls, 17 horses and mares, 30 geldings, 3 pigs breeding, 12 sheep and lambs breeding.

**Northern Rhodesia.**—Nil.

**Bechuanaland Protectorate.**—65 bulls slaughter, 385 oxen slaughter, 21 cows and calves slaughter, 54 pigs slaughter, 402 sheep and lambs slaughter.

**EXPORTATION:**

**Portuguese East Africa.**—15 bulls, 91 oxen slaughter, 40 cows and calves slaughter.

**Northern Rhodesia.**—6 bulls, 68 donkeys and Jackasses, 3 pigs breeding.

**Union of South Africa.**—1 gelding, 19 pigs breeding.

**Belgian Congo.**—1 horse and mares, 10 geldings.

**EXPORTATION—MISCELLANEOUS:**

**Union of South Africa.**—28,440 lbs. Hindquarters Beef; 1,000 lbs. Livers; 6,181 lbs. Sausage Skins; 38,516 lbs. Dripping.

**Bechuanaland Protectorate.** 124 lbs. Sliced Bacon; 104½ lbs. Cooked Shoulder.

**Northern Rhodesia.** 10,028 lbs. Sides; 6,105 lbs. Saddles; 58 lbs. Rolls; 1,843 lbs. Gammon; 2,029 lbs. Cooked Shoulders; 966 lbs. Sliced Bacon.

**Belgian Congo.** 120,860 lbs. Quarters Beef; 10,363 lbs. Offal; 228 lbs. Bungs (No. 1); 232 lbs. Middles; 1,878 lbs. Tripe; 2,788 lbs. Mutton; 5,530 lbs. Veal; 3,729 lbs. Chickens; 253 lbs. Fowls; 250 lbs. Ducks; 2,868 lbs. Goats.

**MEAT PRODUCTS FROM LIEBIGS (RHODESIA) LTD., West Nicholson:**

**Union of South Africa.** 229,560 lbs. Corned Beef; 11,700 lbs. Vienna Sausage; 1,650 lbs. Liver Roll; 7,200 lbs. Steak and Kidney; 10,800 lbs. Braised Steak and Onions; 13,248 lbs. Curried Beef; 720 lbs. Braised Liver; 1,410 lbs. Potted Meat.

**Belgian Congo.**—16,200 lbs. Corned Beef.

(Sgd.) J. S. ADAMSON,
Acting Director of Veterinary Services.

MAY, 1950.

**General.**—Grazing deteriorated in all districts as the result of an inadequate rainfall during the season.

The water position must be considered serious and drought conditions prevailed in many areas. Cattle were reported to be in fair condition.

**Tick Life.**—With the exception of Bulawayo and Fort Victoria Districts, there was a decline in tick life. The following quarantine notices were issued during the month: Salisbury 16, Bulawayo 4, Umtali 3, Gwelo 13, Fort Victoria 20.

**Scheduled Diseases.**—

1. African Coast Fever: Nil.
2. Theileriosis: Three cases occurred in the Melsetter District.
3. Anthrax: Nil.
4. Foot and Mouth Disease: Consequent on the outbreak in Bechuanaland, a strong cordon was placed along the Bechuanaland/Southern Rhodesia Border.
5. Glanders or Farcy: Nil.
6. Heartwater: Heavy mortality occurred at Messrs. Liebigs Ranch, West Nicholson. The cattle emanated from the Fort Victoria District.
7. Lungsickness (Contagious Pleuro Pneumonia of Cattle): Nil.
8. Mange in Horses, Mules, Donkeys and Camels: Nil.
9. Pyaemia or Epizootic Lymphangitis: Nil.
10. Redwater: Cases were reported in all Districts with the exception of Fort Victoria District.
11. Rinderpest: Nil.
12. Swine Erysipelas: Nil.
13. Swine Fever: Nil.
14. Quarter Evil: Cases were reported in the following Districts: Bulawayo, Gwelo (51 deaths), Fort Victoria and Melsetter.
15. Tuberculosis: Tests were made in the Salisbury, Bulawayo, Umtali and Gwelo Districts. Infection occurred in cattle from Messrs. Liebigs Ranch in the Bulawayo District.

16. Scab: Nil.

17. Rabies: Nil.

18. Senkodo Disease: Nil.

19. Trypanosomiasis: In the Chikwiso Reserve, Salisbury District, 4 smears were positive *T. vivax* and 46 smears *T. congolense*.
In the Sebungwe area, Gwelo District, 2 cases *T. congolense* occurred.
Cases also occurred in the Chipinga District.

20. Contagious Epididymitis and Vaginitis (Epi-Vag): In the Salisbury District 3 fresh centres were confirmed.
581 bulls on 198 farms were inspected, of which 12 bulls were found infected and a further 7 bulls are under further observation.
Two farms were released from quarantine. In the Bulawayo District one cross-bred bull was found infected at a Native Cattle Sale (Matati) and destroyed.
No fresh centres of infection were found.
There was no change in the Fort Victoria and Gwelo Districts.
Melsetter and Umtali areas remain free of the disease.

21. Lumpy Skin Disease: A few mild cases were noted in the Salisbury, Bulawayo and Gwelo Districts.

22. Contagious Abortion: Confirmed in the Salisbury, Bulawayo and Umtali Districts.

**Scheduled Poultry Diseases.—**

23. Spirochactosis: Nil.

24. Coccidiosis: Three cases occurred in the Salisbury District.

25. Fowl Typhoid: One case reported in the Umtali District.

26. Bacillary White Diarrhoea: Nil.

27. Tuberculosis: Nil.

28. Chicken Pox and Roup: Nil.

**Other Diseases.—**

29. Gallsickness: Cases were reported in all Districts with the exception of Fort Victoria.

30. Paratyphoid: Nil.

31. Geilsiekte: Two cases were reported in the Bulawayo District.

32. Horse Sickness: The following cases were reported: Salisbury 5, Bulawayo 4, Gwelo 8, Fort Victoria 4.

33. Biliary: Two cases were reported in the Bulawayo District.

34. Sweating Sickness: A few cases occurred in the Salisbury, Bulawayo, Umtali and Gwelo Districts.

35. Opthalmia: Is prevalent in the Salisbury and Fort Victoria Districts, with a few cases in the remaining Districts.

36. Screw Worm: Was reported in all Districts.

37. Coccidiosis: Nil.

38. Internal Parasitis: Still apparent in the Melsetter District.

39. Abortion in Pigs: An outbreak occurred in the Bulawayo District.

**Poisoning.**—

40. Veld Poisoning: Cases occurred in the Bulawayo, Gwelo and Melsetter Districts.

41. Mineral Poisoning: Deaths from Arsenical Poisoning were reported in the Salisbury, Bulawayo, Umtali, Gwelo and Melsetter Districts.
There were 50 deaths in the Salisbury District from Nitrate Poisoning. Cases of Cyanide Poisoning also occurred in the Salisbury and Bulawayo Districts, and 9 deaths in the Salisbury District, the cause of poisoning being unknown.

**Mallein Testing.**—161 head tested with negative results.

**Tuberculin Testing.**—102 head tested with one reactor which was slaughtered.

**IMPORTATION:**

**Union of South Africa.**—11 bulls, 66 cows and calves (for breeding), 18 horses and mares, and 78 geldings.

**Bechuanaland Protectorate.**—2 bulls slaughtered, 170 oxen slaughtered, and 36 cows and calves slaughtered.

**EXPORTATION:**

**Union of South Africa.**—1 bull, 3 horses and mares.

**Portuguese East Africa.**—10 oxen (trek), and 18 cows and calves (for breeding).

**Northern Rhodesia.**—37 donkeys and jackasses, 1 horses and mares, 2 mules, and 27 pigs (for breeding).

**Belgian Congo.**—18 pigs (for breeding).

**EXPORTATION—MISCELLANEOUS:**

**United States of America.**—1,000 lbs. Ox Gall.

**Union of South Africa.**—29,343 lbs. Quarters Beef; 502 lbs. Livers; 13,037 lbs. Sausage Skins; and 1,192 lbs. Bungs.

**Bechuanaland Protectorate.**—10 lbs. Gammons; 149 lbs. Cooked Shoulders; 146 lbs. Sliced Shoulders; and 487 lbs. Smalls.

**Northern Rhodesia.**—12,389 lbs. Sides; 7,000 lbs. Middles; 123 lbs. Liverpool Rolls; 730½ lbs. Hams; 2,070½ lbs. Gammon; 37 lbs. Picnic Hams; 3,597½ lbs. Cooked Shoulders; 1,029 lbs. Sliced Shoulders; and 4,778½ lbs. Smalls.

**Belgian Congo.**—215,209 lbs. Quarters Beef; 34,603 lbs. Standard Fores; 12,057 lbs. Tripe; 5,737 lbs. Offal; and 20,201 lbs. Mutton.

**MEAT PRODUCTS FROM LIEBIGS (RHODESIA) LTD., West Nicholson:**

**Belgian Congo.**—67,680 lbs. Corned Beef.

**Union of South Africa.**—161,100 lbs. Corned Beef; 13,500 lbs. Oxford Sausages; 16,626 lbs. Vienna Sausages; 1,650 lbs. Liver Roll; 9,600 lbs. Steak and Kidney; 6,000 lbs. Braised Steak; 9,600 lbs. Braised Steak and Onions; 8,400 lbs. Curried Beef; and 3,000 lbs. Potted Meat.

J. S. ADAMSON,
Acting Director of Veterinary Services.

# Rhodesian Milk Records

## OFFICIAL MILK RECORDS.

| *Name of Cow.* | *Breed.* | *Age.* | *Milk in lbs.* | *B. Fat in lbs.* | *Average % B. Fat.* | *No. of Days.* | *Name and Address of Owner.* |
|---|---|---|---|---|---|---|---|
| Schoongezicht milk-chocolate | Jersey | 2 years | 6585.00 | 328.81 | 4.99 | 288 | M. W. Burras, Hertford Farm, Box 443, Bulawayo. |
| Dalham Gertie | Jersey | Jun. 3 years | 7550.50 | 392.33 | 5.20 | 300 | F. Gebbie, South Lawn, P.B. 42, Marandellas. |
| Dalham Bella | Jersey | Mature | 5924.50 | 260.21 | 4.39 | 278 | S. Gelman, 27, Baxendale St., Bulawayo. |
| Dalham Louisa | Jersey | Sen. 4 years | 7044.50 | 386.66 | 5.49 | 300 | |
| Matopo Sunbeam | Red Poll | Mature | 7699.80 | 260.66 | 3.39 | 300 | Government Experiment Station, P.B. 19K, Bulawayo. |
| Meadows Lotus | Jersey | Sen. 4 years | 6729.50 | 333.87 | 4.96 | 300 | J. H. Keightley, Moorfields, Glendale. |
| Meadows Pioneer's Daydream | Jersey | Sen. 4 years | 4877.50 | 266.28 | 5.46 | 300 | |
| Msasa Ann | Jersey | Jun. 3 years | 4999.00 | 273.35 | 5.47 | 300 | |
| Msasa Lottie | Jersey | Jun. 3 years | 5695.50 | 250.74 | 4.23 | 270 | |
| Whinburn Amber | Friesland | Mature | 8660.60 | 288.17 | 3.33 | 300 | Major R. R. Sharp, Whinburn, Redbank, Bulawayo. |
| Whinburn Amulet | Friesland | Mature | 11508.30 | 447.67 | 3.89 | 300 | |
| Whinburn Answer | Friesland | Mature | 12969.00 | 454.27 | 3.50 | 300 | |
| Whinburn Blossom | Friesland | Sen. 4 years | 9789.10 | 316.91 | 3.24 | 300 | |
| Whinburn Bluster | Friesland | Sen. 4 years | 8397.20 | 287.92 | 3.43 | 300 | |
| Whinburn Cherry | Friesland | Jun. 3 years | 8916.70 | 285.75 | 3.20 | 300 | |
| Whinburn Chocolate | Friesland | Mature | 8412.10 | 288.08 | 3.42 | 256 | |
| Whinburn Crocus | Friesland | Sen. 3 years | 7276.10 | 243.35 | 3.34 | 291 | |
| Whinburn Puffin | Friesland | Mature | 13036.80 | 440.75 | 3.38 | 277 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Fairseat Oxford Queen | P.B. Jersey | 3 years | 4560.60 | 237.68 | 5.21 | 300 | Lord Acton, M'bebi, Mazoe. |
| Gwentham Vanilla's Vanity | P.B. Jersey | 4 years | 6736.90 | 298.82 | 4.44 | 300 | |
| Bromley | G. Friesland | Mature | 9011.10 | 297.16 | 3.30 | 281 | D. A. Allan, Doctors Gift, P.O. Theydon. |
| Bulawayo | G. Friesland | Mature | 10447.40 | 347.77 | 3.33 | 300 | |
| Jenny | G. Friesland | Mature | 8078.80 | 282.45 | 3.50 | 300 | |
| Sinoia | G. Friesland | Mature | 9094.30 | 311.64 | 3.43 | 300 | |
| Mabel | G. Friesland | Mature | 8790.10 | 278.19 | 3.16 | 300 | Mrs. M. Allan, Doctors Gift, P.O. Theydon. |
| Peggy | G. Friesland | 4 years | 8083.90 | 269.46 | 3.33 | 300 | |
| Susa | G. Friesland | 4 years | 10097.10 | 326.94 | 3.24 | 300 | |
| Herra | G. Friesland | 2 years | 6990.80 | 253.43 | 3.62 | 270 | B. M. Atkinson, P.O. Box 1404, Salisbury. |
| Katerina | G. Friesland | 2 years | 8732.10 | 357.18 | 4.09 | 300 | |
| Lavinia | G. Friesland | 3 years | 6084.70 | 254.19 | 4.18 | 300 | |
| Noni | G. Friesland | 2 years | 9327.30 | 303.28 | 3.25 | 278 | |
| Polly | G. Friesland | 2 years | 7273.60 | 236.64 | 3.25 | 254 | |
| Winnifred | G. Friesland | 2 years | 6651.10 | 230.51 | 3.46 | 257 | |
| Ynyr | G. Friesland | 2 years | 6213.90 | 234.95 | 3.62 | 245 | |
| No. 19 | G. Friesland | Mature | 7026.10 | 245.04 | 3.49 | 300 | C. A. Austen, Box 115, Que Que. |
| Cecil Rhodes | G. Friesland | Mature | 7641.00 | 297.78 | 3.90 | 300 | R. A. Ballantyne, P.O. Box 801, Salisbury. |
| Chicken | G. Friesland | Mature | 6665.00 | 248.77 | 3.73 | 300 | |
| Dancing Lass | G. Friesland | Mature | 5981.00 | 238.66 | 3.99 | 300 | |
| Famous | G. Friesland | Mature | 7517.40 | 236.00 | 3.14 | 300 | N. G. Barrett, Gavenny, P.O. Box 38, Rusape. |
| Panne | G. Friesland | Mature | 7043.90 | 235.96 | 3.35 | 300 | |
| Charter | G. Shorthorn | 4 years | 7818.80 | 288.81 | 3.69 | 300 | F. J. Barry, Umtassa, Box 209, Umtali. |
| Dairy III | G. Shorthorn | Mature | 6811.50 | 280.33 | 4.12 | 300 | |
| Daisy | G. Shorthorn | 3 years | 6709.50 | 287.16 | 4.29 | 287 | |
| Jennifer II | G. Shorthorn | Mature | 7491.60 | 261.22 | 3.49 | 300 | |
| Josie | G. Shorthorn | Mature | 7052.00 | 323.76 | 4.59 | 300 | |
| Monica | G. Shorthorn | Mature | 11843.50 | 477.81 | 4.03 | 300 | |
| Mary | G. Shorthorn | Mature | 7084.30 | 316.79 | 4.47 | 300 | J. H. Barry, En Avant, P.B. Umtali. |

**SEMI-OFFICIAL**—(Continued).

| *Name of Cow.* | *Breed.* | *Age.* | *Milk in lbs.* | *B. Fat in lbs.* | *Average % B. Fat.* | *No. of Days.* | *Name and Address of Owner.* |
|---|---|---|---|---|---|---|---|
| Maypain | G. Friesland | 4 years | 7107.30 | 276.93 | 3.90 | 300 | J. A. Baxter, Glen Norah, Box 1368, Salisbury. |
| Porthole | G. Friesland | 3 years | 7693.80 | 265.63 | 3.45 | 300 | |
| Union | G. Friesland | Mature | 6651.10 | 251.80 | 3.79 | 283 | |
| 15% | G. Friesland | 4 years | 7040.00 | 232.61 | 3.30 | 300 | |
| Penny | G. Guernsey | 4 years | 5621.20 | 256.39 | 4.56 | 266 | J. R. Bedford, Poltimore, Marandellas. |
| D.72 | G. Friesland | Mature | 8206.20 | 263.27 | 3.21 | 289 | A. L. Bickle, Box 595, Bulawayo. |
| D.99 | G. Friesland | Mature | 10048.20 | 326.46 | 3.25 | 300 | |
| D.127 | G. Friesland | Mature | 9068.90 | 303.87 | 3.35 | 300 | |
| D.134 | G. Friesland | Mature | 8400.00 | 272.58 | 3.25 | 260 | |
| D.201 | G. Friesland | 4 years | 7771.30 | 243.48 | 3.13 | 300 | |
| D.186 | G. Friesland | Mature | 7474.90 | 254.09 | 3.43 | 300 | |
| D.218 | G. Friesland | 4 years | 9512.20 | 294.05 | 3.09 | 300 | |
| D.243 | G. Friesland | 3 years | 7183.40 | 283.55 | 3.95 | 300 | |
| D.255 | G. Friesland | 3 years | 6993.30 | 236.07 | 3.37 | 300 | |
| D.270 | G Friesland | 2 years | 6988.50 | 229.45 | 3.29 | 300 | |
| Susie | G. Friesland | Mature | 8776.50 | 289.72 | 3.30 | 300 | Bothashof School, P.B. 164H, Salisbury. |
| Dirko Swart Kapel | P.B. Friesland | Mature | 7898.00 | 308.47 | 3.91 | 292 | C. Boyd Clark, Mount Zonga, Inyazura. |
| No. 188 | G. Friesland | Mature | 8892.00 | 304.09 | 3.42 | 300 | |
| No. 190 | G. Friesland | Mature | 6798.00 | 226.82 | 3.34 | 300 | |
| No. 233 | G. Friesland | Mature | 6924.00 | 257.00 | 3.71 | 300 | |
| No. 349 | G. Friesland | 4 years | 7131.00 | 245.92 | 3.45 | 290 | |
| Grove Park Airbird | G. Friesland | Mature | 8625.00 | 269.78 | 3.13 | 267 | Bradley Bros., P.O. Box 699, Bulawayo. |
| Grove Park Dreamer | G. Friesland | Mature | 8737.00 | 302.27 | 3.46 | 300 | |
| Grove Park Eva | G. Friesland | Mature | 7916.00 | 292.55 | 3.82 | 300 | |
| Grove Park Hester | G. Friesland | Mature | 9703.00 | 327.68 | 3.38 | 300 | |
| Grove Park June | G. Friesland | Mature | 7499.00 | 249.22 | 3.32 | 300 | |
| Grove Park Mavis | G. Friesland | 4 years | 6988.00 | 256.89 | 3.68 | 300 | |
| Grove Park Rose | G. Friesland | 4 years | 8014.00 | 277.98 | 3.47 | 300 | |
| Bella I | G. Friesland | Mature | 6270.00 | 236.50 | 3.77 | 300 | Miss N. Brereton, Coolmoreen, Gwelo. |
| Betty | G. Guernsey | Mature | 6162.00 | 258.35 | 4.19 | 285 | |
| Kathleen | G. Friesland | 4 years | 6360.00 | 231.42 | 3.64 | 300 | |
| Meg | G. Friesland | Mature | 7502.00 | 265.17 | 3.53 | 300 | |

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|---|---|---|---|---|---|---|---|
| Chance | G. Friesland | Mature | 6469.50 | 242.33 | 3.75 | 300 | B.S.A. Co. Mazoe Citrus Estate, Mazoe. |
| Longone | G. Friesland | Mature | 6618.00 | 241.78 | 3.65 | 300 | |
| Plate | G. Friesland | Mature | 8942.50 | 337.10 | 3.77 | 300 | |
| Mafazi | G. Friesland | Mature | 8103.00 | 280.51 | 3.46 | 300 | |
| White II | G. Friesland | Mature | 13403.00 | 448.22 | 3.34 | 300 | |
| No. 20 | G. Friesland | Mature | 9009.30 | 289.60 | 3.21 | 300 | Col. P. A. Brooke, "Borrowdale-Homestead," P.O. Box 1690, Salisbury. |
| No. 50 | G. Friesland | 4 years | 7620.10 | 243.53 | 3.20 | 277 | Brucehame Dairy, Box 21, Fort Victoria. |
| Isobel | G. Friesland | Mature | 9649.00 | 304.70 | 3.16 | 300 | M. W. Burras, Box 443, Bulawayo. |
| June | G. Friesland | Mature | 9738.00 | 292.76 | 3.01 | 300 | |
| Sophie | G. Friesland | Mature | 8017.00 | 306.52 | 3.82 | 300 | E. Butler, Woodlands, P.O. Shamva. |
| Alice | G. Hereford | Mature | 5922.50 | 230.86 | 3.89 | 300 | L. E. O. Cary, Clovelly, P.O. Trelawney. |
| Daisy | G. Friesland | 3 years | 8416.60 | 347.68 | 4.13 | 300 | Mrs. L. Jackson Clarke, Kingston Dairy, Gwelo. |
| Star | G. Friesland | 4 years | 13245.10 | 540.12 | 4.08 | 300 | |
| No. 4 | G. Friesland | Mature | 11893.00 | 385.96 | 3.25 | 300 | Cross & Son, P.B. T.208, Bulawayo. |
| No. 11 | G. Friesland | Mature | 9886.00 | 322.55 | 3.26 | 300 | |
| No. 29 | G. Friesland | Mature | 8695.00 | 293.31 | 3.37 | 300 | |
| No. 41 | G. Friesland | Mature | 6420.00 | 230.21 | 3.59 | 286 | |
| No. 47 | G. Friesland | Mature | 9371.00 | 301.00 | 3.21 | 300 | |
| No. 62 | G. Friesland | Mature | 8432.00 | 283.83 | 3.37 | 300 | |
| No. 69 | G. Friesland | Mature | 7559.00 | 254.96 | 3.38 | 284 | |
| No. 70 | G. Friesland | Mature | 8179.00 | 253.11 | 3.09 | 300 | |
| No. 72 | G. Friesland | Mature | 7880.00 | 252.86 | 3.21 | 300 | |
| No. 74 | G. Friesland | Mature | 6899.00 | 225.87 | 3.27 | 238 | |
| No. 75 | G. Friesland | Mature | 10682.00 | 342.17 | 3.20 | 300 | |
| No. 76 | G. Friesland | Mature | 8559.00 | 324.55 | 3.79 | 300 | |
| No. 80 | G. Friesland | Mature | 8380.00 | 265.37 | 3.17 | 287 | |
| No. 84 | G. Friesland | Mature | 9288.00 | 309.71 | 3.33 | 300 | |
| No. 87 | G. Friesland | Mature | 7361.00 | 243.64 | 3.31 | 300 | |
| No. 96 | G. Friesland | Mature | 8760.00 | 279.17 | 3.20 | 300 | |
| No. 101 | G. Friesland | Mature | 9328.00 | 296.99 | 3.18 | 300 | |
| No. 118 | G. Friesland | 3 years | 8296.00 | 252.57 | 3.04 | 290 | |
| Molly | G. Friesland | 2 years | 6062.70 | 245.65 | 4.05 | 244 | J. V. Danckwerts, P.O. Box 989, Salisbury. |

**SEMI-OFFICIAL**—(Continued)

| *Name of Cow.* | *Breed.* | *Age.* | *Milk in lbs.* | *B. Fat in lbs.* | *Average % B. Fat.* | *No. of Days.* | *Name and Address of Owner.* |
|---|---|---|---|---|---|---|---|
| Lorna | G. Guernsey | Mature | 5428.20 | 249.11 | 4.59 | 283 | E. A. Ditcham, "Roughlands," Marandellas. |
| Phoney | G. Guernsey | Mature | 5972.50 | 236.92 | 3.97 | 283 | |
| Adolf | G. Friesland | Mature | 6053.20 | 239.43 | 3.95 | 300 | A. B. Dobson, Endeavour Farm, Norton. |
| Buttercup | G. Friesland | Mature | 8135.60 | 293.78 | 3.61 | 300 | |
| Enna | G. Friesland | Mature | 6606.40 | 230.65 | 3.49 | 300 | |
| Gradier | G. Friesland | Mature | 7578.60 | 261.17 | 3.43 | 300 | |
| Jophenia | G. Friesland | Mature | 7090.40 | 244.98 | 3.45 | 300 | |
| Lady Godiva | G. Friesland | Mature | 7159.20 | 237.86 | 3.32 | 300 | |
| Sadzi | G. Friesland | Mature | 6559.60 | 241.80 | 3.68 | 300 | |
| Jamblin | G. Friesland | Mature | 6780.00 | 245.74 | 3.62 | 300 | |
| No. 369 | G. Guernsey | Mature | 6410.50 | 265.47 | 4.14 | 282 | B. St. J. D. Downs, Safago, P.B. Gwelo |
| No. 368 | G. Guernsey | Mature | 6484.00 | 241.93 | 3.73 | 259 | |
| No. 456 | G. Guernsey | Mature | 6644.80 | 272.35 | 4.10 | 300 | |
| Beans | G. Friesland | Mature | 6389.20 | 225.65 | 3.52 | 300 | J. N. Duff, Box 3, Marandellas. |
| Jean | G. Friesland | 4 years | 5449.50 | 234.39 | 4.30 | 248 | |
| Kitten | G. Friesland | Mature | 6949.00 | 225.38 | 3.24 | 300 | |
| Marandellas | G. Friesland | Mature | 6248.00 | 248.79 | 3.98 | 300 | |
| Winnie | G. Friesland | Mature | 7169.60 | 229.46 | 3.20 | 285 | |
| Pam | G. Friesland | Mature | 6981.00 | 255.15 | 3.65 | 300 | D. M. Edwards, Box 11, Eiffel Flats. |
| Sally | G. Friesland | Mature | 7617.50 | 353.06 | 4.63 | 258 | |
| Princess Elizabeth | G. Friesland | 4 years | 9810.50 | 332.32 | 3.39 | 300 | R. I. Edwards, Box 25, Chipinga. |
| Queen Bess | G. Friesland | Mature | 9450.60 | 341.44 | 3.61 | 293 | |
| Queen Charlotte | G. Friesland | Mature | 7719.80 | 281.32 | 3.64 | 300 | |
| Queen Victoria | G. Friesland | Mature | 8211.40 | 319.33 | 3.89 | 300 | |
| Windsor Lass | G. Friesland | 4 years | 12217.30 | 439.85 | 3.60 | 300 | |
| Castlezonga Dindsay | P.B. Friesland | Mature | 6391.00 | 269.18 | 4.21 | 257 | Mrs. M. Everard, Castle Zonga, Inyazura. |
| Truant V | G. Friesland | 4 years | 7720.00 | 254.14 | 3.29 | 300 | |
| No. 176 | G. Friesland | Mature | 7962.00 | 294.13 | 3.69 | 300 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. 4 | G. Friesland | 3 years | 7502.50 | 267.08 | 3.56 | 255 | Mrs. H. C. Fischer, Olivia Farm, Headlands. |
| No. 15 | G. Friesland | 3 years | 9337.00 | 306.24 | 3.28 | 300 | |
| No. 60 | G. Friesland | Mature | 8837.50 | 305.29 | 3.57 | 300 | |
| No. 76 | G. Friesland | Mature | 12184.00 | 403.26 | 3.31 | 300 | |
| No. 129 | G. Friesland | Mature | 6028.00 | 225.26 | 3.74 | 244 | |
| No. 147 | G. Friesland | 4 years | 7922.50 | 304.16 | 3.84 | 251 | |
| No. 148 | G. Friesland | Mature | 8494.00 | 309.92 | 3.65 | 295 | |
| No. 157 | G. Friesland | Mature | 9656.50 | 291.64 | 3.02 | 300 | |
| No. 213 | G. Friesland | Mature | 7444.00 | 241.38 | 3.24 | 228 | |
| No. 246 | G. Friesland | Mature | 8651.50 | 298.15 | 3.44 | 300 | |
| No. 247 | G. Friesland | Mature | 10142.00 | 343.80 | 3.39 | 300 | |
| No. 290 | G. Friesland | Mature | 9946.50 | 345.54 | 3.47 | 278 | |
| No. 50 | G. Friesland | Mature | 7611.00 | 256.39 | 3.37 | 293 | R. Le S. Fischer, Wakefield, P.O. Headlands. |
| No. 74 | G. Friesland | Mature | 12090.00 | 430.49 | 3.56 | 300 | |
| No. 77 | G. Friesland | Mature | 6712.00 | 228.29 | 3.40 | 278 | |
| No. 93 | G. Friesland | Mature | 12722.00 | 412.80 | 3.25 | 288 | |
| No. 208 | G. Friesland | Mature | 8442.00 | 284.82 | 3.37 | 248 | |
| No. 215 | G. Friesland | 4 years | 9908.00 | 357.51 | 3.51 | 300 | |
| No. 228 | G. Friesland | 4 years | 9213.00 | 315.70 | 3.43 | 267 | |
| No. 247 | G. Friesland | 4 years | 7342.00 | 255.76 | 3.48 | 300 | |
| No. 251 | G. Friesland | 3 years | 10111.00 | 397.87 | 3.94 | 300 | |
| No. 254 | G. Friesland | 3 years | 7732.00 | 317.95 | 4.11 | 260 | |
| No. 34A. | G. Friesland | 3 years | 5968.00 | 282.32 | 4.73 | 300 | W. F. Fischer, Coldstream Dairy, Headlands. |
| No. 399 | G. Friesland | Mature | 8221.00 | 291.94 | 3.55 | 300 | |
| No. 408 | G. Friesland | 4 years | 6672.00 | 257.66 | 3.87 | 300 | |
| No. 410 | G. Friesland | Mature | 8400.00 | 288.28 | 3.43 | 300 | |
| No. 411 | G. Friesland | Mature | 6431.00 | 237.68 | 3.70 | 300 | |
| No. 418 | G. Friesland | 4 years | 8104.00 | 288.68 | 3.56 | 300 | |
| No. 419 | G. Friesland | 4 years | 8240.00 | 307.53 | 3.73 | 291 | |
| No. 431 | G. Friesland | Mature | 8470.00 | 317.67 | 3.71 | 300 | |
| No. 450 | G. Friesland | Mature | 8337.00 | 321.06 | 3.85 | 288 | |
| No. 453 | G. Friesland | Mature | 10456.00 | 348.67 | 3.35 | 300 | |
| No. 459 | G. Friesland | Mature | 8242.00 | 268.86 | 3.26 | 300 | |
| No. 468 | G. Friesland | Mature | 6546.00 | 247.95 | 3.78 | 300 | |
| No. 482 | G. Friesland | Mature | 8984.00 | 377.29 | 4.20 | 300 | |
| No. 489 | G. Friesland | 4 years | 5821.00 | 238.71 | 4.10 | 300 | |
| No. 490 | G. Friesland | Mature | 8254.00 | 269.73 | 3.27 | 300 | |
| No. 507 | G. Friesland | Mature | 8010.00 | 251.51 | 3.14 | 300 | |
| No. 526 | G. Friesland | 4 years | 6242.00 | 236.13 | 3.78 | 300 | |
| No. 548 | G. Friesland | Mature | 7419.00 | 257.45 | 3.47 | 300 | |
| No. 553 | G. Friesland | Mature | 7536.00 | 270.18 | 3.59 | 300 | |

**SEMI-OFFICIAL**—(Continued).

| *Name of Cow.* | *Breed.* | *Age.* | *Milk in lbs.* | *B. Fat in lbs.* | *Average % B. Fat.* | *No. of Days.* | *Name and Address of Owner.* |
|---|---|---|---|---|---|---|---|
| No. 563 | G. Friesland | Mature | 8206.00 | 294.49 | 3.59 | 300 | W. F. Fischer, Coldstream Dairy, Headlands. |
| No. 572 | G. Friesland | 4 years | 6560.00 | 231.51 | 3.53 | 281 | |
| No. 574 | G. Friesland | Mature | 8092.00 | 295.75 | 3.65 | 300 | |
| No. 557 | G. Friesland | Mature | 8534.00 | 287.99 | 3.38 | 300 | |
| No. 577 | G. Friesland | 4 years | 7566.00 | 299.60 | 3.96 | 300 | |
| No. 578 | G. Friesland | 4 years | 7879.00 | 273.57 | 3.47 | 300 | |
| No. 581 | G. Friesland | 4 years | 6371.00 | 237.05 | 3.72 | 300 | |
| No. 587 | G. Friesland | 4 years | 7177.00 | 266.81 | 3.72 | 260 | |
| No. 589 | G. Friesland | 3 years | 5837.00 | 246.81 | 4.22 | 300 | |
| Blue Bell | G. Friesland | 4 years | 7245.80 | 347.16 | 4.79 | 300 | G. J. Franklin & Son, Box 105, Umtali. |
| Business | G. Friesland | Mature | 8406.10 | 286.87 | 3.41 | 300 | |
| June | G. Friesland | Mature | 6552.40 | 236.54 | 3.61 | 300 | |
| Kingstone | G. Friesland | Mature | 7743.80 | 295.10 | 3.20 | 295 | |
| Mina | G. Friesland | Mature | 11877.20 | 455.01 | 3.83 | 300 | |
| Piri Piri | G. Friesland | 3 years | 10274.40 | 409.94 | 3.99 | 300 | |
| Rezende | G. Friesland | 2 years | 7811.10 | 268.93 | 3.44 | 278 | |
| Shandy | G. Friesland | Mature | 8671.10 | 337.14 | 3.89 | 300 | |
| Very Nice II | G. Friesland | Mature | 6895.40 | 334.95 | 4.86 | 295 | |
| Whitehead | G. Friesland | 2 years | 9158.20 | 369.02 | 4.03 | 300 | |
| Chumdenga | G. Friesland | 4 years | 6946.80 | 229.10 | 3.30 | 300 | P. Freeland, Lingfield, Gwelo. |
| Denga Denga | G. Friesland | 4 years | 7513.80 | 243.10 | 3.24 | 300 | |
| Flo | G. Friesland | Mature | 6741.30 | 227.74 | 3.38 | 300 | |
| Gondall | G. Friesland | Mature | 7243.70 | 241.76 | 3.34 | 300 | |
| Kanda | G. Friesland | Mature | 7866.10 | 265.61 | 3.38 | 300 | |
| Mabema | G. Friesland | 4 years | 6598.80 | 234.41 | 3.55 | 300 | |
| Mafemela | G. Friesland | 3 years | 7148.10 | 253.12 | 3.54 | 300 | |
| Mawalla | G. Friesland | 3 years | 7930.30 | 287.04 | 3.65 | 300 | |
| No. 26 | G. Friesland | Mature | 7552.00 | 303.07 | 4.01 | 300 | |
| No. 29 | G. Friesland | Mature | 8387.00 | 333.60 | 3.98 | 300 | |
| No. 53 | G. Friesland | Mature | 6927.80 | 232.47 | 3.36 | 300 | |
| Inyati | G. Friesland | Mature | 5804.30 | 226.24 | 3.90 | 152 | R. J. Garvin, "Fairview," Umtali. |
| No. 21 | G. Friesland | Mature | 9078.00 | 319.74 | 3.52 | 300 | S. Gelman, 27, Baxendale St., Bulawayo. |

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|---|---|---|---|---|---|---|---|
| Harriet | G. Friesland | Mature | 8140.00 | 256.06 | 3.15 | 300 | Hon. H. V. Gibbs, Bonisa, Redbank, Bulawayo. |
| Gwanda II | G. Friesland | 3 years | 6830.50 | 228.81 | 3.35 | 300 | Government Demonstration Farm, Umshandige, Fort Victoria. |
| Judy | G. Friesland | 4 years | 9925.50 | 338.58 | 3.41 | 300 | |
| Salisbury | G. Friesland | Mature | 9789.00 | 322.41 | 3.29 | 300 | |
| Wendy | G. Friesland | 4 years | 10952.00 | 375.29 | 3.43 | 300 | |
| No. 68 | G. Friesland | Mature | 12914.50 | 369.19 | 3.07 | 300 | |
| No. 103 | G. Friesland | 4 years | 7853.50 | 263.48 | 3.35 | 300 | |
| Cowslip | G. Jersey | 2 years | 5360.50 | 301.07 | 5.61 | 300 | Government Experimental Farm, Karoi. |
| No. 66 | G. Friesland | Mature | 12171.00 | 436.14 | 3.58 | 300 | Grasslands Experiment Stn., Marandellas |
| No. 87 | G. Friesland | 4 years | 11241.00 | 403.80 | 3.59 | 300 | |
| No. 112 | G. Friesland | 4 years | 8831.00 | 332.25 | 3.76 | 300 | |
| No. 27 | G. Friesland | Mature | 8709.00 | 269.07 | 3.10 | 300 | Gwebi Govt. Farm, P.B. 76B, Salisbury. |
| No. 29 | G. Friesland | 4 years | 12543.00 | 379.57 | 3.03 | 300 | |
| No. 33 | G. Friesland | Mature | 10602.50 | 325.50 | 3.07 | 300 | |
| Banjo | G. Friesland | Mature | 8041.00 | 285.55 | 3.55 | 300 | Green Bros., "Tarvie," Guinea Fowl. |
| Zola | G. Friesland | Mature | 6903.00 | 236.57 | 3.43 | 300 | |
| Anne | G. Guernsey | Mature | 5580.80 | 240.51 | 4.31 | 277 | D. A. Harley, Harleyton, P.O. Beatrice. |
| Audrey | G. Guernsey | Mature | 5592.50 | 228.21 | 4.08 | 300 | |
| Colleen | G. Guernsey | Mature | 5745.00 | 231.19 | 4.02 | 264 | |
| Judy II | G. Guernsey | 4 years | 5713.10 | 272.96 | 4.78 | 244 | |
| Marjorie | G. Guernsey | Mature | 5856.50 | 242.52 | 4.12 | 300 | |
| Poppy | G. Guernsey | Mature | 5339.00 | 230.15 | 4.31 | 282 | |
| Rosalie | G. Guernsey | 4 years | 5592.00 | 251.13 | 4.49 | 268 | |
| Una | G. Guernsey | Mature | 6067.00 | 244.66 | 4.03 | 300 | |
| Alice | G. Friesland | 4 years | 6956.00 | 244.04 | 3.51 | 300 | D. J. Huddy, Box 718, Salisbury. |
| Olive | G. Friesland | Mature | 6911.50 | 277.98 | 4.02 | 300 | |
| Pam | G. Friesland | Mature | 10850.50 | 331.33 | 3.05 | 298 | |
| Petal | G. Friesland | Mature | 8140.00 | 318.90 | 3.92 | 300 | |
| Ruby | G. Friesland | Mature | 5794.00 | 229.10 | 3.95 | 251 | |
| Sarah | G. Friesland | 4 years | 7449.00 | 239.62 | 3.22 | 300 | |
| Blom III | G. Friesland | Mature | 6805.70 | 323.25 | 4.75 | 300 | L. Huddy, Box 924, Salisbury. |
| Katie | G. Friesland | 4 years | 5216.20 | 227.86 | 4.18 | 251 | |
| June | G. Friesland | Mature | 6492.20 | 236.42 | 3.64 | 289 | |
| Limbe | G. Friesland | Mature | 7972.90 | 245.78 | 3.08 | 300 | |

**SEMI-OFFICIAL**—(Continued).

| *Name of Cow.* | *Breed.* | *Age.* | *Milk in lbs.* | *B. Fat in lbs.* | *Average % B. Fat.* | *No. of Days.* | *Name and Address of Owner.* |
|---|---|---|---|---|---|---|---|
| Blanche | G. L.R./Shorthorn | Mature | 5694.00 | 242.14 | 4.25 | 285 | Mrs. M. R. Huddy, P.O. Box 899, Salisbury |
| Blossom | G. Guernsey | Mature | 5372.00 | 244.19 | 4.55 | 286 | |
| Meg | G. L.R./Shorthorn | 3 years | 4909.00 | 227.19 | 4.63 | 300 | |
| Victoria | G. Friesland | 3 years | 6151.90 | 227.14 | 3.69 | 300 | Sir G. M. Huggins, Box 122, Causeway, Salisbury. |
| Blackie | G. Friesland | 4 years | 6702.00 | 262.54 | 3.91 | 300 | J. A. G. Hughes, Bains Hope, P.O. Melfort. |
| Buttercup | G. Friesland | 3 years | 7579.00 | 266.85 | 3.52 | 300 | |
| Emily | G. Friesland | Mature | 9246.50 | 308.50 | 3.33 | 300 | |
| Saturday | G. Friesland | Mature | 8377.00 | 270.75 | 3.23 | 300 | |
| J.56/1/4 | G. Friesland | 2 years | 10200.00 | 332.03 | 3.26 | 300 | J. Jamieson, Box 217, Bulawayo. |
| J.57/1 | G. Friesland | Mature | 12065.00 | 393.00 | 3.26 | 300 | |
| J.60/1/1 | G. Friesland | 3 years | 10821.00 | 386.38 | 3.57 | 300 | |
| J.61/1 | G. Friesland | Mature | 9592.00 | 290.26 | 3.03 | 300 | |
| J.61/1 1 | G. Friesland | 4 years | 11329.00 | 369.61 | 3.26 | 300 | |
| J.66/1/4 | G. Friesland | 3 years | 7287.00 | 241.21 | 3.31 | 300 | |
| J.67/3 | G. Friesland | Mature | 8627.00 | 285.34 | 3.31 | 300 | |
| J.94/1 | G. Friesland | Mature | 9307.00 | 286.73 | 3.08 | 300 | |
| J.175/4 | G. Friesland | 4 years | 11229.00 | 378.06 | 3.37 | 300 | |
| J.190/2 | G. Friesland | 4 years | 10703.00 | 351.70 | 3.29 | 300 | |
| J.197/1 | G. Friesland | 3 years | 11327.00 | 352.99 | 3.12 | 300 | |
| No. 11A. | G. Friesland | 2 years | 9012.00 | 291.19 | 3.23 | 300 | D. S. Kabot, Box 261, Bulawayo. |
| No. 36A. | G. Friesland | 3 years | 6948.00 | 238.76 | 3.44 | 300 | |
| No. 21 | G. Friesland | Mature | 6793.00 | 235.31 | 3.46 | 300 | R. G. Kay, Box 606, Bulawayo. |
| No. 27 | G. Friesland | Mature | 7420.00 | 252.50 | 3.40 | 300 | |
| No. 53 | G. Friesland | Mature | 6672.00 | 234.55 | 3.52 | 300 | |
| No. 86 | G. Friesland | Mature | 6100.00 | 226.33 | 3.71 | 300 | |
| No. 87 | G. Friesland | Mature | 7239.00 | 244.24 | 3.38 | 300 | |

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|---|---|---|---|---|---|---|---|
| No. 9 | G. Friesland | Mature | 6843.50 | 291.57 | 4.26 | 300 | B. H. Kew, Box 972, Bulawayo. |
| No. 19 | G. Friesland | Mature | 4784.20 | 234.18 | 4.89 | 290 | |
| No. D.8 | G. Friesland | Mature | 8555.60 | 291.53 | 3.41 | 300 | |
| No. K.14 | G. Friesland | Mature | 8558.40 | 288.71 | 3.37 | 300 | |
| No. K.18 | G. Friesland | Mature | 11451.20 | 423.83 | 3.70 | 300 | |
| No K.39 | G. Friesland | 4 years | 7108.40 | 277.06 | 3.90 | 300 | |
| Bromley | G. Friesland | 2 years | 7415.00 | 301.06 | 4.06 | 282 | D. King, Rockwood Farm, Concession. |
| Doreen | G. Friesland | Mature | 6668.00 | 238.99 | 3.58 | 257 | |
| Jane II | G. Friesland | 3 years | 5347.00 | 237.36 | 4.44 | 279 | |
| Marimba | G. Friesland | Mature | 9157.00 | 326.89 | 3.57 | 292 | |
| Naomi | G. Friesland | Mature | 7641.00 | 244 76 | 3.20 | 300 | |
| Sally II | G. Friesland | Mature | 6638.00 | 246.76 | 3.72 | 261 | |
| Tib | G. Friesland | Mature | 7305.00 | 240.01 | 3.29 | 265 | |
| Violet | G. Friesland | Mature | 7136.00 | 239.40 | 3.35 | 263 | |
| Zena | G. Friesland | 3 years | 6397.00 | 238.46 | 3.57 | 292 | |
| Daisy | G. Guernsey | 3 years | 5683.90 | 237.83 | 4.18 | 300 | J. A. G. Kirstein, P.O. Box 199, Gwelo. |
| Mary | G. Guernsey | 4 years | 6413.00 | 260.91 | 4.07 | 300 | |
| Nancy | G. Guernsey | 3 years | 5955.60 | 234.37 | 3.94 | 300 | |
| Kingston Sarla | G. Friesland | Mature | 9324.00 | 363.50 | 3.90 | 289 | Kingston Farm Syndicate, Box 2, Bindura. |
| Kingston Sylvia | G. Friesland | 3 years | 8696.00 | 294.34 | 3.38 | 300 | |
| Annie | G. Friesland | Mature | 5895.70 | 246.97 | 4.19 | 300 | Mrs. M. M. Krahner, Haydock Park. Banket. |
| Balla Balla | G. Friesland | Mature | 6176.20 | 235.66 | 3.81 | 300 | |
| Mary | G. Friesland | Mature | 7167.10 | 233.65 | 3.26 | 300 | |
| Ivy | G Friesland | Mature | 5321.50 | 242.74 | 4.56 | 276 | J. N. L. MacIlwaine, Box 23, Marandellas. |
| Buttercup | G. Ayrshire | Mature | 5899.00 | 237.26 | 4.02 | 300 | J. MacIntyre, Box 58, Shamva. |
| Cape | G. Jersey | Mature | 6280.00 | 261.91 | 4.17 | 300 | J. U. McCay, P.B. J181, Bulawayo. |
| Minhinick Yoga | P.B. Friesland | 3 years | 9808.00 | 381.41 | 3.89 | 300 | |
| Thibet Park Lindberg Zwartje V | P.B. Friesland | 4 years | 7832.00 | 243.47 | 3.11 | 300 | |
| No. 111 | G. Friesland | Mature | 7656.00 | 306.60 | 4.00 | 300 | |
| Bucket | G. Red Poll | Mature | 7178.70 | 301.25 | 4.20 | 300 | J. H. McLean, Box 161, Gwelo. |
| Nellie | G. Ayrshire | Mature | 7814.00 | 271.90 | 3.48 | 298 | |
| Vaseline | G. Ayrshire | Mature | 5380.00 | 227.71 | 4 23 | 295 | |
| No. 21 | G. Friesland | Mature | 7422.10 | 309.90 | 4.18 | 300 | |

**SEMI-OFFICIAL**—(Continued).

| *Name of Cow.* | *Breed.* | *Age* | *Milk in lbs.* | *B. Fat in lbs.* | *Average % B. Fat.* | *No. of Days.* | *Name and Address of Owner.* |
|---|---|---|---|---|---|---|---|
| Bless No. 7 | G. Friesland | Mature | 6316.50 | 233.33 | 3.69 | 234 | L. McLean, Divide, Gwelo. |
| Mecca | G. Friesland | Mature | 8217.00 | 249.73 | 3.04 | 274 | |
| Lopear | G. Friesland | Mature | 7130.10 | 256.48 | 3.60 | 285 | D. W. Marshall, Alderbury, Box 164, Umtali. |
| Violet | G. Friesland | Mature | 6799.30 | 242.35 | 3.56 | 300 | A. R. Matches, P.O. Box 64, Salisbury. |
| Lelia | G. Jersey | Mature | 6153.90 | 307.47 | 4.99 | 273 | Lt.-Col. C. I. F. Maynard, Melfort, P.B 113C, Salisbury. |
| Rusty | G. Jersey | 2 years | 5231.50 | 254.37 | 4.86 | 292 | |
| P.15/2 | P.B. Friesland | Mature | 8177.00 | 249.50 | 3.05 | 300 | Meikles Trust & Invest. Co., Ltd., Leachdale Farm, Shangani. |
| P.17/0 | P.B. Friesland | Mature | 8030.00 | 241.89 | 3.01 | 300 | |
| G.3/3 | G. Friesland | Mature | 7291.00 | 248.38 | 3.41 | 300 | |
| G.18/2 | G. Friesland | Mature | 6990.00 | 247.09 | 3.53 | 300 | |
| G.21/5 | G. Friesland | 4 years | 6832.00 | 238.23 | 3.49 | 300 | |
| P.12/2 | P.B. Friesland | Mature | 7257.00 | 225.50 | 3.11 | 300 | |
| P.5/3 | P.B. Friesland | Mature | 6619.00 | 227.82 | 3.44 | 300 | |
| P.23/3 | P.B. Friesland | Mature | 7261.00 | 250.00 | 3.44 | 300 | |
| G.2/1 | G. Friesland | Mature | 6934.00 | 232.90 | 3.36 | 300 | |
| G.2/2 | G. Friesland | Mature | 9777.00 | 304.58 | 3.12 | 300 | |
| G.28/3 | G. Friesland | Mature | 7312.00 | 255.17 | 3.49 | 295 | |
| Dirko Jong Bont Boumlie | P.B. Friesland | 2 years | 7270.00 | 293.91 | 4.08 | 300 | A. L. Millar, Estes Park, P.B. 28A. Salisbury. |
| Dirko Jong Klein Boumlie | P.B. Friesland | 3 years | 8228.00 | 307.20 | 3.73 | 300 | |
| Dirko Jong Kleir Roos VI | P.B. Friesland | 3 years | 6249.90 | 254.57 | 4.07 | 300 | |
| Dirko Ounooi | P.B. Friesland | 2 years | 5756.00 | 236.48 | 4.11 | 300 | |
| Olive | G. Red Poll | Mature | 6805.00 | 260.30 | 3.83 | 300 | C. F. Mitchell, P.O. Box 1027, Bulawayo. |
| Bet Bet | G. Ayrshire | Mature | 7293.00 | 329.77 | 4.52 | 285 | R. L. Moffat, Ormiston, Shangani. |
| Fanny | G. Ayrshire | 4 years | 5757.00 | 235.61 | 4.09 | 265 | |

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|---|---|---|---|---|---|---|---|
| Royce | G. Ayrshire | Mature | 5852.00 | 257.09 | 4.39 | 300 | Com. E. L. Morant, Box 741, Salisbury. |
| Vivian | G. Ayrshire | 4 years | 6040.00 | 232.00 | 3.84 | 300 | |
| Crescent | G. Friesland | Mature | 6790.00 | 294.40 | 4.34 | 256 | C. F. S. Morkel, Two Streams, P.O. Macheke. |
| Lorna | G. Friesland | Mature | 6502.00 | 253.10 | 3.89 | 300 | |
| No. 127 | G. Friesland | Mature | 8494.00 | 273.50 | 3.22 | 300 | F. B. Morrisby, Box 36, Gwelo. |
| No. 157 | G. Friesland | Mature | 9640.00 | 302.71 | 3.14 | 296 | |
| No. 102 | G. Friesland | Mature | 7668.00 | 242.32 | 3.16 | 300 | |
| No. 138 | G. Friesland | Mature | 8088.00 | 243.77 | 3.01 | 300 | |
| No. 168 | G. Friesland | Mature | 7770.00 | 242.45 | 3.12 | 300 | |
| No. 192 | G. Friesland | Mature | 7920.00 | 258.70 | 3.27 | 300 | |
| No. 194 | G. Friesland | Mature | 7794.00 | 237.81 | 3.05 | 300 | |
| No. 196 | G. Friesland | Mature | 7660.00 | 238.52 | 3.11 | 300 | |
| Powder | G. Friesland | Mature | 7696.00 | 266.72 | 3.47 | 300 | |
| Grace | G. Friesland | Mature | 8117.60 | 319.14 | 3.94 | 300 | J. T. Mungle, Myreside, Odzi. |
| Fry | G. Friesland | 3 years | 6141.10 | 244.14 | 3.98 | 300 | |
| Ivy | G. Friesland | 3 years | 5550.60 | 226.49 | 4.08 | 300 | |
| Sophie | G. Friesland | 4 years | 7035.40 | 317.45 | 4.51 | 300 | |
| Chaluci | G. Friesland | Mature | 8342.00 | 257.84 | 3.09 | 300 | K. Norvall, Box 637, Bulawayo. |
| Exwell | | | | | | | |
| Lindfast Denise | P.B. Friesland | Mature | 9858.00 | 332.92 | 3.38 | 285 | |
| Iris | G. Friesland | Mature | 6945.00 | 230.26 | 3.32 | 300 | |
| Mabel | G. Friesland | Mature | 7644.00 | 252.67 | 3.31 | 279 | |
| Maisie I | G. Friesland | Mature | 6505.00 | 228.94 | 3.52 | 279 | |
| Minhinick | | | | | | | |
| Beaulah | P.B. Friesland | 3 years | 10043.00 | 349.21 | 3.48 | 300 | |
| Seaborough | | | | | | | |
| Sybil | P.B. Friesland | 2 years | 8056.00 | 253.60 | 3.15 | 285 | |
| Seaborough Kaikop | P.B. Friesland | 3 years | 11709.00 | 383.84 | 3.28 | 300 | |
| Sisi I | G. Friesland | Mature | 6654.00 | 232.96 | 3.50 | 300 | |
| Sparrow II | G. Friesland | Mature | 6018.60 | 227.72 | 3.78 | 300 | |
| Tina I | G. Friesland | Mature | 6904.00 | 232.78 | 3.37 | 300 | |
| Vegetable II | G. Friesland | Mature | 6610.00 | 241.78 | 3.65 | 300 | |
| Cape Town | G. Friesland | Mature | 7732.00 | 277.30 | 3.60 | 300 | |
| Nellie I | G. Friesland | Mature | 7707.00 | 313.55 | 4.07 | 300 | |
| Numnet | G. Friesland | Mature | 8208.00 | 267.17 | 3.26 | 300 | |
| Sausage | G. Red Poll | Mature | 8542.00 | 325.18 | 3.81 | 300 | |
| Sagoy I | G. Friesland | Mature | 7391.00 | 264.14 | 3.57 | 300 | |
| No. 3 | G. Friesland | 4 years | 5613.00 | 237.57 | 4.23 | 300 | P. Odendaal, Whittington, Box 4, Chipinga. |
| No. 80 | G. Friesland | 4 years | 5577.00 | 229.65 | 4.12 | 300 | |
| No. 117 | G. Friesland | 3 years | 6233.00 | 240.92 | 3.89 | 274 | |

**SEMI-OFFICIAL**—(Continued).

| *Name of Cow.* | *Breed.* | *Age.* | *Milk in lbs.* | *B. Fat in lbs.* | *Average % B. Fat.* | *No. of Days.* | *Name and Address of Owner.* |
|---|---|---|---|---|---|---|---|
| Bell | G. Friesland | Mature | 7987.30 | 293.76 | 3.68 | 271 | E. Palmer, Ferndale, Penhalonga. |
| Bell II | G. Shorthorn | Mature | 8092.90 | 352.47 | 4.36 | 300 | |
| Blackie II | G. L.R./Shorthorn | Mature | 7561.60 | 275.36 | 3.64 | 244 | |
| Kettelan II | G. L.R./Shorthorn | Mature | 7479.10 | 288.57 | 3.86 | 232 | |
| Sally | G. L.R./Shorthorn | Mature | 5954.90 | 231.76 | 3.89 | 237 | |
| Sheila III | G. Friesland | 2 years | 8162.00 | 282.47 | 3.46 | 300 | |
| Helen II | G. Friesland | 2 years | 8576.30 | 311.72 | 3.63 | 261 | |
| Petal III | G. Friesland | 23 months | 6089.30 | 235.48 | 3.87 | 290 | |
| No. 3 | G. Friesland | 3 years | 7624.10 | 264.95 | 3.48 | 262 | |
| Daisy | G. Friesland | Mature | 8487.40 | 339.76 | 4.03 | 243 | |
| Jenny | G. Friesland | Mature | 10584.20 | 405.19 | 3.83 | 289 | |
| Ada | G. Jersey | Mature | 7378.50 | 236.37 | 3.20 | 300 | Mrs. M. Parsons, P.O. Box 7, Bulawayo. |
| Freda | G. Friesland | 2 years | 7825.50 | 293.74 | 3.75 | 300 | |
| Poemisa | G. Friesland | 2 years | 6861.00 | 258.71 | 3.77 | 274 | |
| Spokes | G. Friesland | Mature | 10504.00 | 315.81 | 3.01 | 300 | |
| Susie | G. Friesland | 4 years | 10575.00 | 337.08 | 3.18 | 300 | |
| Cynthia | G. Friesland | 3 years | 9137.00 | 279.95 | 3.06 | 300 | |
| Dinah | G. Friesland | Mature | 6459.00 | 236.57 | 3.66 | 165 | |
| Mac | G. Friesland | 3 years | 9908.00 | 312.75 | 3.16 | 300 | |
| Nash | G. Friesland | Mature | 11641.00 | 369.28 | 3.17 | 300 | |
| Torch | G. Friesland | Mature | 15696.00 | 574.32 | 3.66 | 300 | |
| No. 96A | G. Friesland | Mature | 6411.00 | 225.96 | 3.52 | 300 | T. C. Pascoe, P.O. Box 1253, Salisbury. |
| No. 5 | G. Jersey | 3 years | 4110.70 | 296.31 | 7.21 | 300 | H. Pretorius, Eureka, Macheke. |
| Bettafit | G. Friesland | Mature | 8395.50 | 298.39 | 3.56 | 300 | Red Valley Estate, Lushington, Marandellas. |
| Mauure I | G. Friesland | Mature | 8744.10 | 328.41 | 3.76 | 300 | |
| Rhodesia | G. Friesland | Mature | 6589.00 | 253.59 | 3.86 | 279 | G. W. Robinson, Marimba Farm, Box 346, Salisbury. |
| Simbe | G. Friesland | 4 years | 6330.60 | 242.43 | 3.83 | 273 | |
| Danga | G. Friesland | Mature | 6664.90 | 229.89 | 3.45 | 300 | Mrs. M. Rogers, Bickford, Gwelo. |
| Meallies | G. Friesland | Mature | 6392.30 | 240.98 | 3.77 | 300 | |
| Victoria | G. Friesland | Mature | 6808.60 | 274.16 | 4.03 | 300 | |

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|---|---|---|---|---|---|---|---|
| Jesitara | G. Friesland | 3 years | 6412.60 | 235.42 | 3.67 | 300 | W. F. H. Scutt, Maple Leaf, Norton. |
| Liben | G. Friesland | Mature | 9229.90 | 327.62 | 3.54 | 300 | |
| Maswina | G. Friesland | Mature | 6448.40 | 265.88 | 4.12 | 300 | |
| Poppy | G. Friesland | Mature | 8249.80 | 328.73 | 3.98 | 300 | |
| Lynmouth Fairy-flower Ideal | P.B. Jersey | 5 years | 4217.60 | 225.32 | 5.34 | 269 | S. M. Sinclair, Albany, P.B. Melsetter. |
| Mukunyadza | G. Ayrshire | Mature | 5987.90 | 229.65 | 3.84 | 252 | |
| Katie | G. Friesland | Mature | 6411.00 | 265.45 | 4.01 | 300 | F. Squires, P.O. Box 1052, Salisbury. |
| Battle Fairy I | P.B. Ayrshire | Mature | 7795.00 | 300.93 | 3.86 | 300 | J. R. Stewart & Sons, Ltd., Battle Farm, P.O. Shangani. |
| Chia | G. Red Poll | Mature | 5671.80 | 232.63 | 4.10 | 300 | H. Stobart, Atlanta, Arcturus. |
| Katherine | G. Friesland | Mature | 5190.70 | 263.30 | 5.07 | 273 | |
| Sybil | G. Friesland | Mature | 5961.00 | 262.21 | 4.39 | 300 | |
| Cup | G. Friesland | Mature | 8169.20 | 259.52 | 3.18 | 300 | H. Swaine, Box 131, Gwelo. |
| Gando | G. Friesland | Mature | 6584.20 | 229.02 | 3.48 | 300 | |
| Button | G. Friesland | Mature | 13336.00 | 494.92 | 3.71 | 300 | E. Tapson Trust, Ltd., Lesapi Falls, Rusape. |
| Maggie | G. Friesland | Mature | 10526.00 | 340.84 | 3.24 | 300 | |
| Majuta | G. Friesland | Mature | 8925.00 | 337.77 | 3.78 | 300 | |
| Pickup | G. Friesland | 3 years | 7169.00 | 265.90 | 3.71 | 285 | |
| Rhoda II | G. Friesland | 3 years | 7576.00 | 308.74 | 4.08 | 295 | |
| Rose | G. Friesland | Mature | 10708.00 | 354.81 | 3.31 | 279 | |
| Tshabani | G. Friesland | Mature | 9116.00 | 285.92 | 3.14 | 289 | |
| Cousins II | G. Friesland | Mature | 8990.50 | 320.50 | 3.68 | 300 | L. Taylor, Box 55, Selukwe. |
| Hamba Lala | G. Friesland | Mature | 7484.60 | 263.60 | 3.53 | 300 | |
| Hester | G. Friesland | 4 years | 7[illegible]3.50 | 287.34 | 3.88 | 300 | |
| Hotel | G. Friesland | Mature | 6395.80 | 251.63 | 3.39 | 288 | |
| January | G. Friesland | Mature | 6353.70 | 231.32 | 3.64 | 277 | |
| Mapepa | G. Friesland | Mature | 8021.30 | 273.34 | 3.41 | 300 | |
| Nyumbe | G. Red Poll | Mature | 7495.90 | 315.39 | 4.15 | 289 | |
| Training Camp | G. Friesland | Mature | 6657.50 | 231.20 | 3.47 | 300 | |
| Zomba | G. Friesland | Mature | 5362.60 | 236.95 | 4.42 | 273 | |
| Surum | G. Friesland | Mature | 7794.50 | 250.68 | 3.22 | 280 | |

**SEMI-OFFICIAL**—(Continued).

| *Name of Cow.* | *Breed.* | *Age.* | *Milk in lbs.* | *B. Fat in lbs.* | *Average % B. Fat.* | *No. of Days.* | *Name and Address of Owner.* |
|---|---|---|---|---|---|---|---|
| Betty | G. Friesland | Mature | 8414.00 | 285.87 | 3.40 | 300 | A. W. Tennent, Kelvin, Headlands. |
| Cissy | G. Friesland | Mature | 7304.30 | 255.17 | 3.50 | 248 | |
| Ghenna | G. Friesland | Mature | 7837.80 | 304.51 | 3.89 | 300 | |
| Sarah | G. Friesland | Mature | 8014.90 | 266.87 | 3.33 | 280 | |
| Susan | G. Friesland | Mature | 7394.60 | 275.07 | 3.72 | 278 | |
| Tilly | G. Friesland | Mature | 7672.60 | 275.48 | 3.59 | 290 | |
| Una | G. Friesland | Mature | 6645.40 | 239.32 | 3.61 | 276 | |
| No. 7 | G. Friesland | Mature | 8156.40 | 292.47 | 3.59 | 300 | |
| No. 55 | G. Friesland | 4 years | 6538.60 | 230.97 | 3.53 | 253 | |
| No. 56 | G. Friesland | 4 years | 6334.00 | 246.84 | 3.90 | 271 | |
| No. 65 | G. Friesland | 3 years | 6684.00 | 227.18 | 3.40 | 300 | |
| Daisy | G. Red Poll | Mature | 6559.70 | 226.53 | 3.45 | 300 | J. G. Thurlow, Atherstone, Bindura. |
| Norton | G. Red Poll | Mature | 6764.60 | 255.98 | 3.79 | 300 | |
| Red Leaf Amour | P.B. Red Poll | 4 years | 6231.20 | 226.17 | 3.63 | 300 | |
| Norta II | G. Red Poll | Mature | 7019.20 | 278.37 | 3.97 | 300 | |
| Buttercup | G. Friesland | Mature | 8179.10 | 302.72 | 3.71 | 300 | Mrs. M. Turnbull, Box 479, Bulawayo. |
| Meg | G. Friesland | 4 years | 6359.90 | 269.52 | 4.24 | 300 | |
| Annie | G. Friesland | Mature | 10468.60 | 330.57 | 3.16 | 300 | |
| Lightfoot | G. Friesland | 2 years | 6741.20 | 227.62 | 3.38 | 300 | |
| Dewdrop | G. Friesland | Mature | 7260.00 | 285.80 | 3.94 | 300 | Miss van Niekerk, "Claremont," Inyanga, P.B. Rusape. |
| Jenepher | G. Friesland | 4 years | 7278.50 | 241.98 | 3.32 | 273 | |
| Mere Poppy | G. Friesland | Mature | 7101.00 | 247.10 | 3.48 | 300 | R. O. Waldschutz, Mere Farm, Box 27, Marandellas. |
| Moffu III | G. Friesland | Mature | 7467.00 | 273.37 | 3.66 | 264 | |

# NOTICE

## HORSESICKNESS INOCULATION.

Horsesickness Inoculation.—Vaccine for the inoculation of horses and mules of any age against horsesickness will be issued from now onwards until the end of November at a cost of 6s. per dose post free.

Immunity does not reach its height until some months after inoculation, and owners are therefore urged not to defer inoculation until the end of the season.

The vaccine must be used within seven (7) days of its despatch from the Laboratory, and will be issued direct to applicants who will be required to do or arrange for the inoculation themselves.

Directions for use will be supplied with the vaccine.

Applications, in writing, and enclosing the cash remittance, should be made to the Assistant Director of Veterinary Services (Research), P.O. Box 101, Causeway, Salisbury.

Orders will be dealt with strictly in rotation and according to supplies which may be available at the time.

Applications will neither be acknowledged nor considered unless they are accompanied by cash (6s. per dose) and received by the 30th November, 1950.

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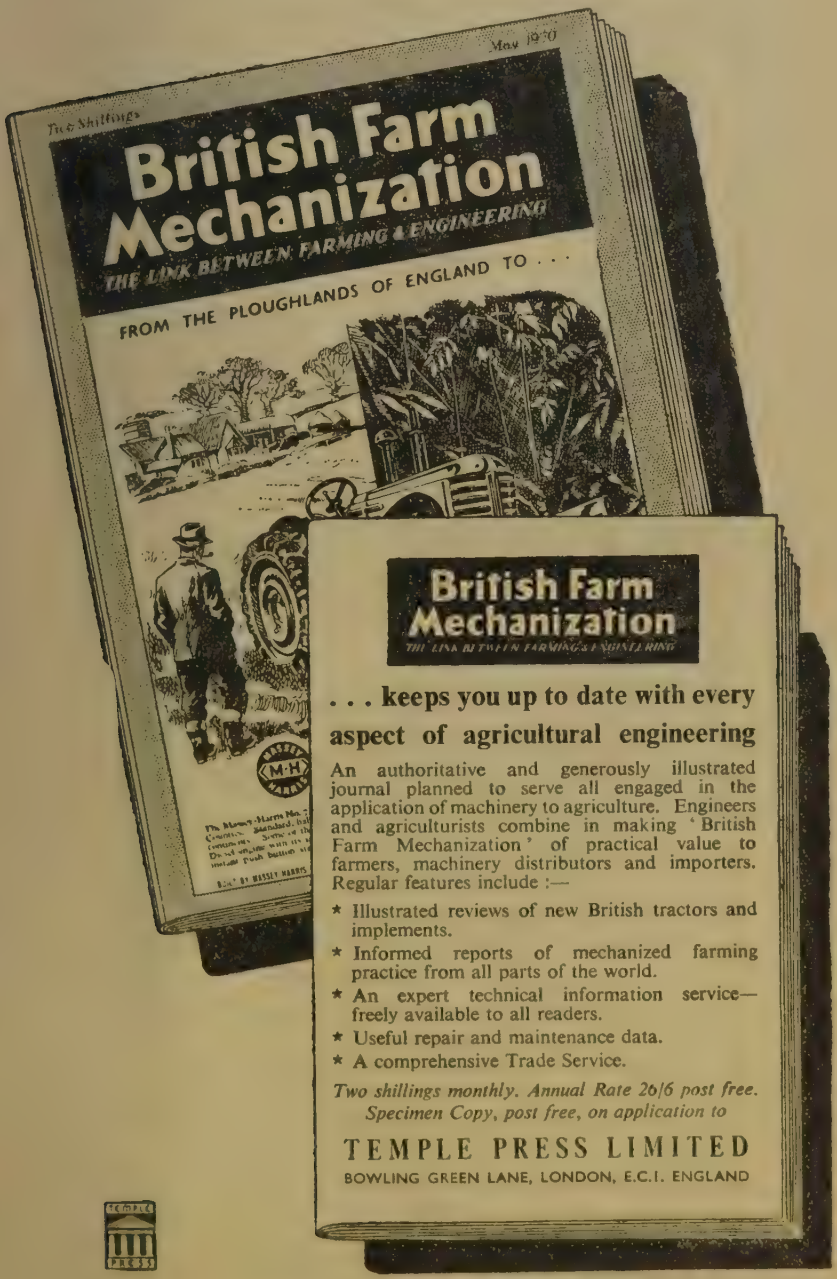


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